# Annual report

Chicago (Ill.). Dept. of Public Works

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# Thirty-Fourth Annual

# ..REPORT..

OF THE

# DEPARTMENT OF PUBLIC WORKS

To the City Council of the
City of Chicago

FOR THE YEAR ENDING DECEMBER 31
1909

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# CITY EXECUTIVE OFFICERS

FRED A. BUSSE,
MAYOR.

FRANCIS D. CONNERY,
CITY CLERK.

ISAAC N. POWELL,
CITY TREASURER.

# THE CITY COUNCIL—1909-10

1st Ward—
John J. Coughlin.
Michael Kenna.

2nd Ward—
Thomas J. Dixon.
Geo. F. Harding, Jr.

3rd Ward—
Wm. J. Pringle.
Milton J. Foreman.

4th Ward—
John A. Richert.
James M. Dailey.

5th Ward—
William J. McKenna.
John J. Sheahan.

6th Ward—
Arthur B. McCoid.
Theodore K. Long.

7th Ward—
Bernard W. Snow.
Charles E. Merriam.

8th Ward—
John H. Jones.
John R. Emerson.

9th Ward—
Henry L. Fick.
Dennis J. Egan.

10th Ward—
Rudolph Hurt.
Thomas F. Scully.

11th Ward—
Otto J. Novak.
E. F. Cullerton.

12th Ward—
Anton J. Cermak.
Michael Zimmer.

13th Ward—
James E. Evans.
Arthur W. Fulton.

14th Ward—
Charles J. Lucas.
James H. Lawley.

15th Ward—
Albert W. Beilfuss.
Henry Utpatel.

16th Ward—
Frank W. Koraleski.
Stanley H. Kunz.

17th Ward—
William E. Dever.
Lewis D. Sitts.

18th Ward—
Michael C. Conlon.
John J. Brennan.

19th Ward—
James B. Bowler.
John Powers.

20th Ward—
Nicholas R. Finn.
John P. Stewart.

21st Ward—
Charles M. Foell.
Francis W. Taylor.

22nd Ward—
B. F. Clettenberg.
Herman J. Bauler.

23rd Ward—
Fred A. Britten.
Jacob A. Hey.

24th Ward—
Herman G. Redwanz.
August Krumholz.

25th Ward—
Chas. M. Thomson.
Winfield P. Dunn.

26th Ward—
Peter Reinberg.
William F. Lipps.

27th Ward—
James F. Clancy
Joseph F. Capp.

28th Ward—
Wm. H. Blencoe.
Harry E. Littler.

29th Ward—
John Golombiewski.
Matthias A. Mueller.

30th Ward—
John Burns.
Michael McInerney.

31st Ward—
William J. Roberts.
James A. Kearns.

32nd Ward—
Homer E. Tinsman
(Resigned
March 1, 1909).
Albert J. Fisher.

33rd Ward—
Ernest Bihl.
Charles E. Reading.

34th Ward—
Patrick J. Nolan.
William F. Ryan.

35th Ward—
Chas. J. Forsberg.
John S. Clark.

# PAST COMMISSIONERS OF PUBLIC WORKS

## WATER BOARD

1851-54—John B. Turner, Prest., Horatio G. Loomis, Alson S. Sherman.
1854-56—James H. Woodworth, Prest., John C. Haines, George W. Dole.
1856-58—Geo. W. Dole, Prest., Orrington Lunt, John C. Haines.
1858-60—Geo. W. Dole, Prest., Orrington Lunt, Noah Sturtevant.
1860-61—Orrington Lunt, Prest., Edward Hamilton, Benjamin Carpenter.

## SEWERAGE BOARD

1855-59—Wm. B. Ogden, Prest., James D. Webster, Sylvester Lind.
1859-61—James D. Webster, Prest., Sylvester Lind, Philip Conley.

Water and Sewerage Boards merged May 6, 1861, into

## BOARD OF PUBLIC WORKS

1861-63—Benjamin Carpenter, Prest., John G. Gindele, Frederick Letz.
1863-65—Francis C. Sherman, Mayor, ex-officio member of the Board.
1863-67—John G. Gindele, Prest., Frederick Letz, Orrin J. Rose.
1865-69—Wm. Gooding and Roswell B. Mason, members of the Board in matters pertaining to the cleansing of the river.
1867-69—Aug. H. Burley, Prest., Wm. H. Carter, John McArthur.
1869-71—John McArthur, Prest., Wm. H. Carter, Redmond Prindiville.
1869-71—Wm. Gooding and Edward B. Talcott, members of the Board in matters pertaining to the cleansing of the river.
1871-73—Wm. H. Carter, Prest., Jas. K. Thompson, Redmond Prindiville.
1873-76—Redmond Prindiville, Prest., Louis Wahl, Jas. K. Thompson.

Board of Public Works abolished September 18, 1876, and on the same date there was established by the City Council

## THE DEPARTMENT OF PUBLIC WORKS

1876-78—Monroe Heath, Mayor, Acting Commissioner.
January 7 to May 18, 1879—E. S. Chesbrough.
May 19, 1879, to October 18, 1881—Charles S. Waller.
October 19, 1881, to February 4, 1882—Carter H. Harrison, Mayor, Acting Commissioner.
February 4, 1882, to January 31, 1886—DeWitt C. Cregier.
February 1, 1886, to June 28, 1886—Carter H. Harrison, Mayor, Acting Commissioner.
June 28, 1886, to April 11, 1887—W. H. Purdy.
April 12, 1887, to April 15, 1889—George B. Swift.
April 16, 1889, to April 27, 1891—W. H. Purdy.
April 28, 1891, to December 24, 1892—J. Frank Aldrich.
December 24, 1892, to April 25, 1893—E. Louis Kuhns, Acting Commissioner.

April 25, 1893, to November 21, 1894—Hiram J. Jones.

November 21, 1894, to November 28, 1894—John A. Moody, Acting Commissioner.

November 28, 1894, to April 8, 1895—John McCarthy.

April 8, 1895, to July 20, 1896—William D. Kent.

July 20, 1896, to April 15, 1898—Joseph Downey.

April 16, 1897, to May 21, 1901—L. E. McGann.

May 21, 1901, to May 24, 1905—F. W. Blocki.

May 24, 1905, to March 1, 1906—Jos. M. Patterson.

March 1, 1906, to April 15, 1907—Wm. L. O'Connell.

# DEPARTMENT OF PUBLIC WORKS

## CITY OF CHICAGO

JOHN J. HANBERG
COMMISSIONER

PAUL REDIESKE
DEPUTY COMMISSIONER

T. J. SULLIVAN
SECRETARY

### HEADS OF BUREAUS

| | |
|---|---|
| City Engineer | JOHN ERICSON |
| Superintendent of Sewers | WM. E. QUINN |
| Superintendent of Water | W. J. McCOURT |
| Superintendent of Streets<br>(Died October 22, 1909. Succeeded by P. H. McCarthy, Assistant Superintendent.) | M. J. DOHERTY |
| Superintendent of Compensation | H. V. McGURREN |
| City Architect | WM. J. KRIEG |
| Superintendent of Maps and Plats | JNO. D. RILEY |
| Department Chief Accountant | JOHN A. KLEINE |

# ANNUAL REPORT

# COMMISSIONER OF PUBLIC WORKS

CITY OF CHICAGO

1909

# COMMISSIONER'S REPORT

OFFICE OF THE COMMISSIONER OF PUBLIC WORKS,
CITY OF CHICAGO.

To the Honorable, the Mayor and the City Council of the City of Chicago:

GENTLEMEN:—I herewith submit the Thirty-fourth Annual Report of the Department of Public Works for the year 1909, which gives in detail the work performed by the various Bureaus and Divisions comprising the Department.

## BUREAU OF ENGINEERING.

### WATER.

175,939,000,000 gallons of water were pumped as against 175,516,671,000 gallons pumped in 1908.

### CONSTRUCTION WORK.

Foundations for the Roseland pumping station were completed and a contract awarded for the superstructure of the building.

An addition to the Lake View pumping station was completed and a new twenty-five million gallon pumping engine put into service.

A new boiler room was erected and two eighty-horse power tubular boilers equipped with Hawley down draft furnaces were installed at the Rogers Park pumping station. In addition thereto two new horizontal pressure type filters, each having a capacity of 500,000 gallons per day, were installed.

### WATER PIPE SYSTEM.

59.88 miles of water pipe of various sizes were laid during the year; 18.91 miles were taken up or abandoned, and 8,815 feet of pipe were lowered. In connection with the lowering of this pipe service pipes were lowered wherever necessary from the mains to the curbs. The city water pipe system consists of 2,229.93 miles, 4,937 feet of water pipe of sizes ranging from three inches to and including forty-eight inches in diameter.

1,309 fire hydrants were placed including those used to replace hydrants of different sizes. The total number of fire hydrants now in use by the City is 23,339. In addition thereto there are 113 fire cisterns in use.

604 stop valves were installed including those used to replace valves of different sizes. The total number of valves now in use is 19,277.

4,090 leaks in water mains, service pipes and fire hydrants were repaired.

## BRIDGES AND VIADUCTS.

The bascule bridge over the North Branch of the Chicago River at Kinzie street was completed and opened to traffic during the year. New bridges were built over the Illinois and Michigan Canal at Ashland avenue and at Kedzie avenue. New bascule bridges now being constructed over the North Branch of the Chicago River at Erie street and over the South Branch of the Chicago River at Polk street are expected to be ready for traffic early in 1910. A number of old swing bridges are beyond repair and should be replaced as soon as possible by modern bridges.

On account of being an obstruction to navigation the bridge at Fuller street was removed by order of the United States Government. The Blackhawk street, Weed street and Lake street bridges were also ordered removed by the Government for similar reasons. As there is no bridge at Washington street the business interests of the City would be greatly inconvenienced in that vicinity if the Lake street bridge were removed before the construction of a new bridge at Washington street.

Nearly all the viaducts in the City were inspected and examined and the various railroads owning tracks underneath them were notified to reconstruct or reinforce the structures wherever necessary pursuant to an ordinance passed by the City Council on July 6, 1909.

For years the bridges and viaducts of the City have been constructed less than the width of the street. In consequence traffic is delayed, especially in business and congested localities adjacent to the bridges and viaducts. This is especially true at the Wells and at the Lake street bridges, and at other bridges across the Chicago River, its Branches and the Calumet River.

I recommend that in future all new bridges and viaducts be constructed the full width of the street, and wherever possible that old bridges and viaducts be widened to meet the conditions, unless there is a good reason for not doing so.

During the year the City of Chicago maintained sixty-seven bridges over the Chicago River and its Branches and the Calumet River. Twenty-eight viaduct systems were available for public traffic. Of the bridges forty-eight were movable and nineteen are fixed spans. Twelve of the movable bridges are rolling lift bridges, nine are trunnion bascule bridges (City's design), one is a Page bascule bridge, one is a vertical lift bridge and twenty-five are swing bridges. Thirty-two of the movable bridges are operated with electricity, one with steam and thirty-four with hand power.

### HARBORS.

122 permits were issued for the construction of 13,605.3 lineal feet of new docks, the rebuilding of 17,023½ lineal feet of old docks and the repairing of 2,821 lineal feet of old docks.

Seventy-six permits were issued for dredging in the Chicago River and its Branches and the Calumet River, and six permits for dredging in Lake Michigan and Lake Calumet.

Fifty-one permits were issued for towing scows loaded with other than dredged material.

Expenditures for improvements of the harbors of Chicago for 1909 were as follows:

| | |
|---|---|
| City of Chicago | $ 54,532.64 |
| Sanitary District | 30,863.22 |
| United States Government | 579,690.47 |
| Total | $664,586.33 |

### SEWERS.

There are 9,704,392 feet of City sewers of various sizes, 73,843 catch basins and 68,381 manholes.

34,968 lineal feet of sewers and 25,976 catch basins were cleaned during the year.

It is impossible for the Bureau of Sewers to properly take care of the City's sewer system with the small amount of money allotted the Bureau by your Honorable Body. This can be seen by comparing the sewers and catch basins cleaned with the total feet of sewers and number of catch basins in the City.

18,414 complaints were attended to during the year and 13,535 inspections were made.

$71,481.07 were expended for repairs of sewers, manholes and catch basins, and $29,493.14 for repairs of manholes and catch basin covers.

The house drain work of the Bureau of Sewers surpassed that of any former year. The receipts of this Division amounted to $50,938.70.

### BUREAU OF WATER.

The gross collections of the Bureau amounted to $5,194,140.18 or an increase of $417,727.68 over the year 1908. The net income amounted to $4,758,524.86, or an increase of $540,448.82 over 1908.

The general assessments account aggregated $3,365,647.10 or an increase of $217,741.30 over 1908.

158,117 inspections were made, which included annual complete house to house examinations in the 32d, 33d, 34th, 35th, 1st, 2d, 3d, 4th, 5th and 6th wards and part of the 7th ward.

14,883 water meters of various sizes are now in use.

### STREETS.

#### GARBAGE AND ASHES.

93,267¾ tons of pure garbage were collected and delivered to the Chicago Reduction Company's plant at 39th and Iron streets. This Company has a contract with the City to take and dispose of the garbage delivered to it by the City at an annual cost of $47,500. The cost of collection and delivery of this garbage amounted to $364,996.14. 3,000 tons more of pure garbage were collected and delivered by the City to this plant than in 1908, and at a less expense, the saving being $8,181.58.

1,234,192 cubic yards or 248,251 loads of ashes and rubbish were collected and hauled at a total cost of $704,104.75. 275,000 cubic yards of these ashes were used in filling unimproved streets and alleys to grade, including filling of sidewalk space.

#### CLEANING.

67,066 miles of streets and alleys were cleaned, which necessitated the removal of 203,769 loads of dirt amounting to 815,703 cubic yards. 3,885,298 square yards of weeds were cut, and 1,603,901 inlets to catch basins were opened and cleaned.

The cost of this work was $822,298.98. $136,450.67 of this amount is charged to the traction companies for cleaning their rights of way. Of this amount $34,352.25 was refunded to the First Ward appropriation, and the balance was turned into the general fund.

35,307 loads of snow or 139,141 cubic yards were removed at a cost of $50,000.

### OILING OF ROADS.

A number of macadam roadways were oiled during the year as an experiment with a road oil emulsion consisting of a mixture of twenty-five pounds of linseed soap, 100 gallons of oil, and 400 gallons of water. The results obtained were very satisfactory. In consequence it is deemed advisable to install and equip more plants for the preparation of this emulsion.

### STREET AND ALLEY MILEAGE.

On December 31, 1909, the City of Chicago had 2,880.665 miles of streets and 1,434.888 miles of alleys. The area of the City amounts to 190.638 square miles.

### COMPENSATION BUREAU.

During the year this Bureau issued 3612 permits requiring the payment of $19,402.91 in fees, 306 permits requiring no fees and eighty-one permits under ordinances passed by the City Council and orders passed by the Committee on Compensation. $230,758.81 was collected by the Bureau as against $172,074.53 collected under accounts established by the Bureau prior to January 1, 1909.

### MAPS AND PLATS.

On account of the new house number ordinance becoming effective on September 1, 1909, 185,000 changes in house numbers were made.

Respectfully submitted,
JOHN J. HANBERG,
Commissioner of Public Works.

ANNUAL REPORT

# BUREAU OF ENGINEERING

CITY OF CHICAGO

1909

JOHN ERICSON
CITY ENGINEER

# BUREAU OF ENGINEERING

Hon. John J. Hanberg,
Commissioner of Public Works.

Dear Sir: I respectfully submit to you for your consideration the annual report of the Bureau of Engineering for the year ending December 31, 1909.

The reports of the various divisions which fully record and describe the work accomplished are embodied and submitted under the various division headings.

A brief summary of the information contained therein is as follows:

## WATER PUMPING STATIONS.

### OPERATION AND MAINTENANCE.

During the year the total pumpage was 175,939,500,000 U. S. gallons against an average head of 113.8 feet. The total pumpage for 1909 exceeded the pumpage of 1908 by a total of 3,422,329,000 gallons, at an increase average head of 1.3 feet. Based on a population of 2,400,000 the per capita pumpage per day equals about 200 gallons.

For the purposes of comparison and completeness of the records a record of the operation of the eleven pumping stations is submitted and are listed as eight major and three minor stations.

A comparison of the cost of operation of the major stations for the year 1909 with the cost for the station for the year 1908 shows that the average net cost of pumping one million gallons of water one foot high was 3 78/100 cents for 1909 as against 3 84/100 cents for 1908.

It should be noted that this is not the cost of delivery of the same unit of water to the consumer, as the latter cost would include the expenses of supervision, repairs and maintenance, interest and depreciation, and a proportionate part of the necessary expense of free water for public purposes, and unavoidable loss in quantity and pressure from the pumping station to the consumer.

In 1909 it required 14.5 pounds of coal to pump one million gallons one foot high. In 1908 it required 14.8 pounds to pump the same unit.

The average price of coal per ton in 1909 was $2.38 and in 1908 was $2.26. The cost of coal for pumping one million gallons one foot high was 1 72/100 cents in 1909 and 1 68/100 cents in 1908.

The average cost of salaries for pumping one million gallons one foot high in 1909 was 1 82/100 cents. 1908 it was 1 93/100 cents.

The total expenditures for operation, repairs, and maintenance of the eleven stations for the year 1909 was $876,858.41. In 1908 it was $946,365.89.

## CONSTRUCTION.

A brief summary of the water works construction work is as follows:

### ROSELAND PUMPING STATION.

The placing of the foundations for the building was nearly completed by the end of the year 1909.

On December 6th a contract was awarded for the erection of the superstructure of the building, to be completed by December 31, 1910.

On September 8th a contract was awarded for the building and erection of two twenty-five million gallon pumping engines and one electric crane, to be completed March 15, 1911.

### LAKE VIEW PUMPING STATION—NEW ADDITION.

The building was completed during the year, and the new twenty-five million gallon pumping engine was completed and placed in operation on August 18th.

### ROGERS PARK PUMPING STATION.

A new boiler room was erected and two eighty horsepower tubular boilers equipped with Hawley down draft furnaces were installed. Two new horizontal pressure type filters, each having a capacity of 500,000 gallons per day, were erected.

### SOUTHWEST LAKE AND LAND TUNNEL.

Section 1—The work done in order to complete the section consisted of lining 10,443.3 feet of arch and side walls and 15,545.3 feet of invert. The total length of this section of tunnel is 22,366.3 feet.

Section 3—The two shafts at the outer crib were sunk through the bottom of the crib, the east shaft being sunk to 37 ft. C. D. and the west shaft to 54 ft. C. D.

Mining in the drifts from the Intermediate Crib was delayed on account of the disastrous fire of January 20th, which resulted in an appalling loss of life and destroyed the upper portion of the crib.

A total of 6,184.35 lineal feet of tunnel was excavated; 4,250 lineal feet of arch and side walls, and 649 feet of invert was lined. The total length of this section is 12,136 ft.

### BLUE ISLAND AVENUE LAND TUNNEL.

During the year the gates were set in the various shafts and the shafts were covered in and completed. The necessary tunnel connections with existing tunnels and pumping stations were completed and the tunnel was placed in service on September 19th.

### LAWRENCE AVENUE SEWAGE PUMPING STATION AND CONDUIT.

A number of small contracts tending toward the completion of the station and conduit were finished during the year. The system is now complete with the exception of the roof of the crib on the lake end of the conduit.

The official test of the engines showed that the engines were able to develop the duty guaranteed by the builders.

### CARTER H. HARRISON, SR., SEWAGE PUMPING STATION (39TH STREET).

Some minor work tending toward the completion of the station and conduit was completed during the year.

### WATER PIPE EXTENSION.

The net increase in the water pipe system for the year 1909 amounted to 40.97 miles of water pipe of all sizes, 643 fire hydrants and 495 stop valves.

There was a total of 59.88 miles of water pipe of various sizes laid and a total of 18.91 miles was taken up or abandoned.

The appropriation of funds by the City Council provided for the installation of a 24-inch feeder main in Larrabee street from Belden avenue to Fullerton avenue, and in Fullerton avenue from Larrabee street to Clark street, and for the placing of necessary 36-inch, 42-inch and 48-inch discharge piping for the new engine at the Lake View pumping station. Both of these installations were completed during the year.

The amount of work required to be done on the water pipe system on account of paving is a matter that should receive the most careful consideration at the time the appropriation of funds is being made for water pipe extension work.

The advisability of putting the underground water pipe system in the best possible shape before streets are repaved cannot be questioned and a fund to handle such work should be provided at the time the appropriations are under consideration.

### WATER WORKS SHOPS.

The following is a list of the fire hydrants and valves manufactured during the year:

| | |
|---|---|
| 1,059 | 2½-inch standard fire hydrants. |
| 24 | 4-inch standard fire hydrants. |
| 2 | 4-inch frost proof fire hydrants. |
| 44 | special hydrants with 8-inch bottoms. |
| 190 | 4-inch stop valves. |
| 239 | 6-inch stop valves. |
| 87 | 8-inch stop valves. |
| 53 | 12-inch stop valves. |
| 1 | 16-inch stop valve. |

The miscellaneous repair work done by this division was handled on a job and invoice system.

### TESTS AND INSPECTIONS.

The coal delivered to the various pumping stations was regularly analyzed for the laboratory determination of ash, moisture and British Thermal Units. A monthly evaporation test was made at each station.

Material such as cast iron water pipe, special castings, corporation ferrules, etc., were subjected to tests and inspections before being accepted or paid for by the City.

## RECOMMENDATIONS.

### RECOMMENDATIONS.

The following recommendations for improvements to the water supply system are the ones considered most urgent and which should first be acted upon. Data on which to base other recommendations for further extensions and improvements have been collected and prepared, but such recommendations can be deferred. I respectfully suggest that funds be provided for the carrying out of the recommendations as they are made.

1. Erect two additional new engines at Lake View Pumping Station.
2. Extend the feeder main system from the Lake View Pumping Station into territory now supplied from the Rogers Park Station and abandon this station as soon as possible.
3. Extend the system of feeder mains from the new Roseland Pumping Station as rapidly as possible.
4. Purchase property in the vicinity of the present Sixty-eighth Street Pumping Station and prepare for the construction of a new station equipped with modern machinery.
5. Construct the Lake extension of the Blue Island Avenue Tunnel.
6. Purchase property in the vicinity of Forty-seventh street and Kedzie avenue for a site for a new pumping station to be supplied by a proposed extension of the Blue Island Avenue tunnel.
7. Remodeling of the steam pipe system and other auxiliaries at various pumping stations so as to bring the plants up to date.
8. A curtailment of the water waste and leakage by an extension of the water survey work and by a more liberal installation of meters.

### BRIDGES AND VIADUCTS.

A new bascule bridge over the North Branch of the Chicago River at Kinzie street was completed and opened to traffic. Considerable progress was made on the new bridges at Polk street on the South Branch and at Erie street on the North Branch.

New bridges were built over the Illinois and Michigan Canal at Ashland avenue and at Kedzie avenue.

An old bridge at Fuller street was removed from service by order of the United States Government.

A thorough inspection of all viaducts within the City limits was made to comply with an order of the City Council passed July 6, 1909. The results of the inspection were submitted to the various railroad companies and repairs were ordered made at such points as were found dangerous.

The United States Government has ordered the removal of the swing bridge at Lake street to be completed by December 31, 1910.

The inconvenience that would be caused by removing this bridge from service before the traction tunnel and bridge at Washington street are completed should be brought to the attention of the Secretary of War and he should be prevailed upon to extend the time for the removal of the bridge.

The swing bridges at Ninety-second street and at Thirty-fifth street are very expensive to keep in service and are almost beyond repair. I would urge that provisions be made for the erection of new bridges at these points, as well as at other points where old bridges have been ordered removed.

Respectfully submitted,
JOHN ERICSON,
City Engineer.

# PUMPING STATIONS

## DIVISION OF OPERATION AND MAINTENANCE

MR. WILLIAM J. BURNS

CHIEF ENGINEER OF PUMPING STATIONS

## FOURTEENTH STREET PUMPING STATION

MR. HUGH MARTIN, CHIEF ENGINEER

### BUILDINGS AND GROUNDS.

The outside wood work of the doors, windows and skylights of the engine and boiler room and the inside wood work of the same in the boiler room was repainted. All lockers were cleaned and varnished. The window cases were equipped with bronze sash chains. The gutters and down spouts of the engine room roof were repaired.

The following parts of the building were whitewashed: Walls of the boiler room; walls and ceiling of the engine room basement, and the piers of the engines.

The team scale was thoroughly overhauled, and the oak frame and platform of the same were entirely renewed.

The driveway of the alley west of the station was repaved with granite blocks.

### ENGINES AND PUMPS.

No. 1 PUMPING ENGINE.—One new 6-inch throttle valve and one new 6-inch steam separator were installed on the main steam pipe. One new brass bucket was placed in the condenser pump, and the discharge plate of the same was refaced. A new set of brass sleeves were provided for the rods of the condenser and boiler feed pumps. The governor was thoroughly overhauled. All defective rubber valves and springs were removed and new parts inserted. The intake and discharge pipes of the main pump were repainted.

No. 2 PUMPING ENGINE.—The valve motion, steam exhaust and dash pot rods were refitted with new brass key heads. Steel pins for the key heads were placed in the wrist plate and bell cranks. The wrist plates and bell cranks on the high intermediate and low pressure cylinders were bored out and refitted wth new phosphor bronze bushings. All pins of the same were trued up. A cast steel steam bonnet and new brass exhaust steam valve stems were placed on the low pressure cylinder. The cast steel eccentric rocker shaft arm and the crosshead shoes were renewed. All of the crank and crosshead brasses were refitted and the oil grooves were recut. The governor was thoroughly overhauled. The condenser pump was refitted with a new bucket and discharge plate. Brass packing rings were provided for the bucket.

A set of new brass sleeves were placed on the rods of the condenser and boiler feed pumps. Repairs to the main pump valves required the replacing of 240 defective valve seats and the refacing of 600 valve seats. 840 defective rubber valves and phosphor bronze springs were renewed. The steel grating and the intake and discharge pipes were repainted.

No. 3 Pumping Engine.—The valve motion, steam exhaust and dash pot rods were refitted with new brass key heads. Steel pins for the key heads were placed in the wrist plate and bell crank. The wrist plates and bell cranks were trued up and refitted with phosphor bronze bushings. New brass sleeves were provided for the rods of the condenser and boiler feed pumps. Repairs to the main pump valves required the replacement of 500 defective valve seats and the refacing of 340 seats; 840 new rubber valves and phosphor bronze springs were provided. All of the high pressure crank brasses were re-babbitted. The main pump intake and discharge pipes were repainted.

No. 4 Pumping Engine.—The wrist plates were refitted with phosphor bronze bushings. The valve stem brackets, wrist plate and steam bonnet pins were trued up. New steel pins were placed in the wrist plate for the steam exhaust and dash pot rods. The rods were trued up and provided with phosphor bronze bushings. One two-gallon nine feed oil pump was placed on the steam cylinder. Marine style metallic packing was placed in the high pressure piston rods. Four hundred defective rubber valves were renewed. The main pump intake and discharge pipes and all steel gratings were repainted.

### BOILERS AND FURNACES.

In the six Scotch marine boilers at this station a total of 126 tubes were renewed. On the furnace of boiler No. 5 a new bottom front header, necessary 6-inch circulating pipes, 31 new steel furnace tubes, and 6 cast iron front doors were provided. The brickwork was reset. A total of 96 new steel tubes were placed in the furnaces of Nos. 1, 2, 3, 4 and 6 boilers. The feed water piping from the purifiers to boilers Nos. 3, 4, 5 and 6 was renewed. All necessary defective pipe covering was renewed.

### COAL AND ASH HANDLING PLANT.

The coal crusher was refitted with new crusher rolls, shafts, gears, and bearing boxes. The crusher engine was provided with new steel piston rods and new crank and crosshead brasses. The conveyor engine was removed from the platform on top of the coal hoppers and located on a concrete foundation on the boiler room floor. Necessary new shafting and counter shafting with pulleys, brackets and belting were provided for the successful operation of the conveyor plant from the new position of the engine. Repairs to the Link Belt conveyor required the placing of 75 new steel rollers and 8 new links.

### ELECTRIC LIGHT SYSTEM.

The engine was refitted with a new piston rod and a new valve stem. New crosshead brasses were provided.

### KNOWLES BILGE PUMP.

The valve motion was thoroughly overhauled. A new piston rod and head were provided. A new brass sleeve was placed in the water end.

### NO. 3 BLAKE BOILER FEED PUMP.

The steam and water cylinders were bored out. One new piston rod was provided. The valve motion was thoroughly overhauled.

### RECOMMENDATIONS.

An additional thickness of fire proof covering should be placed on the steam piping from the boilers to the engines. New concrete or brick foundations are required under the condenser pumps of engines Nos. 1, 2 and 3. Engine No. 3 will require a new throttle valve. The piping on the electric light engine should be rearranged so as to pass through the heater. A new metal gutter and two additional down spouts are required on the south wall of the building. Engines Nos. 1, 2, 3 and 4 require painting. A traveling crane should be erected in the engine room. An emergency high pressure fire pump with hose and connections should be provided for additional fire protection.

## SIXTY-EIGHTH STREET PUMPING STATION.

Mr. James Roach, Acting Chief Engineer.

### BUILDINGS AND GROUNDS.

A temporary wooden curb was built between the packway and roadway of the street. Two new ventilators were placed over the machine shop. The metallic valleys, gutters, down spouts and ridge moulding were overhauled and repaired. The slate of the engine room roof was removed and new binder strips were securely fastened to the roof, and the slate was relaid. All defective window frames and sash were repaired and repainted. All iron work in the boiler room was repainted.

### ENGINES AND PUMPS.

No. 1 Pumping Engine.—One broken brass on the strap end of the left main rod was patched and refitted. The brasses and pins of the right and left high pressure crosshead and on the beam end of the high pressure rod were filed, fitted and lined up. A new key was fitted on the left high pressure piston. The water ends of the pumps were overhauled and about one hundred defective valves were replaced.

No. 2 Pumping Engine.—A new gib was fitted to the low pressure crosshead. A broken beam cap on the right side was reinforced with steel bands. The high pressure beam brasses were planed off, and refitted. A broken main connecting rod was removed and a new rod was provided. The brasses on both ends of the rod were refitted. The water ends of both pumps were overhauled and about five hundred defective valves and springs were replaced.

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No. 3 PUMPING ENGINE.—A new brass was fitted to the crank end on the right side. A new main connecting rod was fitted to replace a broken rod. The broken rod was patched and the engine was kept in service until the new rod was finished. The crossheads on the low pressure side were lined up. Two new gibs were fitted to the right low pressure rod. A complete set of new Reynolds' type water valves were placed in the water ends.

No. 4 PUMPING ENGINE.—New bushings were fitted to the rocker arm and to the valve rods, and the pins of the left and right high pressure cylinders were turned up. A band was shrunk on a broken valve arm of the left high pressure cylinder. New keys were fitted in on the tie rods of the left water end.

No. 5 PUMPING ENGINE.—The key on the right low pressure beam end was raised and the brasses of the left low pressure rod were closed. The right and left low pressure beams were moved and the crossheads were lined up. The brasses on the beam ends of both high pressure rods were closed. The valves in the water end were turned and refaced where necessary.

No. 6 PUMPING ENGINE.—New oil feeders were placed on the water plungers and pistons. All defective water valve seats were refaced and new valves were installed where they were found necessary. The water ends of the pump were repainted.

No. 7 PUMPING ENGINE.—The air pumps were overhauled and were fitted with a new set of valves. A broken brass of the crank end of the left main rod was lined and fitted to the pin. A new 6-inch valve was placed on the main steam pipe, and renewed a defective piece of the 8-inch steam pipe.

### BOILERS AND FURNACES.

The brickwork on all of the furnaces of the old tubular boilers was renewed when it was required. Two new tubes were placed in each of the water tube boilers Nos. 1 and 2, and the tubes in boiler No. 3 were rolled. The brickwork on all of the water tube boilers was repaired and the brick wall between furnaces Nos. 3 and 4 was rebuilt. The chain grates were overhauled and repaired.

### COAL AND ASH HANDLING PLANT.

Two new steel hoisting cables were placed in service. The chain on the grab clam was renewed on three occasions. Two new clutch backs were provided. A new controlling device was fitted to the electric equipment. A metallic shield was placed to provide protection for the wires and motors from the weather. All of the iron work was entirely repainted. The grab buckets were reriveted.

### RECOMMENDATIONS.

An electrically operated car mover with necessary blocks and tackles should be installed. A mechanical device should be installed to facilitate the removal of ashes from the pits under the water tube boilers.

The track and trolley used to operate the coal handling machinery should be extended to the south over the entire length of the machine shop, in order to provide for the use of the traveling crane to unload and handle storage coal.

One new 75 K. W. electric light engine and generator should be installed for furnishing light and power.

The basement of the building should be wired for electric light, and a connection should be provided for obtaining current from an outside source for use in cases of emergency.

The station should be equipped with an electric crane installed to travel over all of the engines.

A new wash room with lockers should be provided for the employes of the station. The station should be provided with better store room facilities.

The stop valves on the discharge main of each pump should be equipped with a mechanism to be operated by a portable electric motor in order to facilitate the closing or opening of the valves in cases of emergency.

## CHICAGO AVENUE PUMPING STATION.

MR. DANIEL L. SULLIVAN, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

The sheet metal work of the skylights, gutters and down spouts were entirely repaired. Necessary repairs were made to the roof of the engine and boiler room. An opening was cut in the east wall of the station and an area was provided for the handling of coal for firing the independent superheater.

### ENGINES AND PUMPS.

REIDLER NO. 1.—The suction and discharge valves on the water end of the low pressure cylinder were removed, and new compression plates were fitted and the rubbers were repaired. In October a new crosshead pin was fitted in the boiler feed pump. In November the lower shoe was broken off of the lower intermediate high pressure steam valve and the same was refitted by inserting a countersink bolt, and then riveting the end. During December the three water plungers and all water valve stems were packed, the water valve stem pins and brasses were refitted. The air pump was fitted with new valves where needed and put in good condition.

REIDLER NO. 2.—During February a number of new tubes were installed in the condenser. In June the low pressure water plunger was packed, the grab claws were refitted and new oil was placed in the dash pots. The south intermediate high pressure delivery valve of water end was removed and a new one installed. During October the condenser was fitted with a few new tubes, repairs were made to steam valve gear and a new stem was fitted to upper drain valve of south intermediate high pressure water end. In December the water plungers and stems were repacked, the air pump was overhauled, a new plunger was fitted in drain pump, the cylinder was rebored, and the rod was refitted. The oil piping of the high pressure cylinder was renewed. All brasses and pins on water valve gear were refitted.

REIDLER No. 3.—In June the drain pump cylinder was bored out and a new brass plunger was fitted. The valve stem slots of intermediate and low pressure steam valves were milled and steel plates were riveted on the T end of valve steams. The three water plungers were repacked, and the Cook's metallic packing was refitted to the lower steam valve stems of both intermediate, high pressure and low pressure cylinders. In October several new tubes were placed in the condenser and the low pressure dashpots were overhauled and new oil was provided.

### GASKILL ENGINES.

The air pumps and boiler feed pumps were lined up and all connections of the same were refitted. The connection keys were removed and were replaced after being cleaned up. The expansion joint on the steam connection of No. 1 engine was made over with a new copper gasket. The low pressure crosshead on the left side of No. 2 engine was lined up and a new pin was fitted to the air pump head.

### SHOP ENGINE.

The cylinder was rebored and a new solid piston and a new ring and piston rod were fitted. The steam valve and seat were planed and rescraped, new rod brasses were provided, and a new pin was fitted in the valve stem. The governor was fitted with a new shaft and gear.

### BOILERS AND FURNACES.

During the year the tubes in the various boilers were repeatedly expanded and caulked and a number of defective tubes were renewed. A full set of new tubes and stays were fitted in boilers Nos. 1, 3 and 4. The brick settings and linings of the various boilers and furnaces were repaired during the year. The fronts of boilers Nos. 1, 2 and 3 were reset A new lower back water header and a set of new tubes were placed in No. 3 furnace. New iron coal spouts were erected on the furnaces of Nos. 1, 3 and 6 boilers. The asbestos covering of all of the boilers was patched and repaired. A new brick arch was built in the superheater.

### PIPING AND STEAMFITTING.

A steam separator was placed on the bilge pump steam line. The asbestos covering of the steam and fall pipes was patched and repaired.

### COAL AND ASH HANDLING PLANT.

The journals of the crusher engine was refitted and the governor and valve gear was overhauled. One new tooth was fitted in the main shaft gear of the crusher. A number of new brackets, wheels and links were fitted to the conveyor.

### RECOMMENDATIONS.

The water ends of the Reidler and Gaskill engines should be repainted. Two new boilers should be installed in order to provide sufficient boiler capacity. New water headers should be built in the furnaces of boilers Nos. 1, 2, 4, 5 and 6. The iron top of the water tower should be renewed and the stand pipe brackets and steps should be fastened and then entirely scraped and painted. The interior wall of the engine room should be repaired and decorated and the roof and girders should be painted. New door frames and doors should be provided for the engine room. The coal conveyor train should be overhauled and repaired. The stone work of the northwest corner of the engine room should be reset.

## TWENTY-SECOND STREET PUMPING STATION.

MR. JOSEPH O'CONNELL, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

Necessary repairs were made to the engine room roof. The interior walls and window and door linings of the engine room and offices and the under surface of the roof and trusses for the same were entirely repainted. The inside iron stand pipe of the water tower, which is 5 feet in diameter and 167 feet high, was painted to preserve it from rust. All defective ladders and platforms of the tower structure were removed and replaced. The roadway of Ashland avenue was paved with granite blocks.

No. 1 PUMPING ENGINE.—The high pressure crosshead and beam pins and brasses were refitted. The engine was repainted.

No. 2 PUMPING ENGINE.—The high pressure crosshead and beam pins and brasses were refitted. The combination air pump and condenser was overhauled and repaired. The engine was repainted.

No. 3 PUMPING ENGINE.—The high pressure crosshead and beam pins and brasses were refitted. The combination air pump and condenser was overhauled and a new rubber foot valve was provided. A new 8-inch double beat brass valve was placed on the floating top above the air pump piston. New springs were placed on the 4-inch and 24-inch water valves. The engine was repainted.

No 4 PUMPING ENGINE.—The high pressure crosshead and beam pins and brasses were refitted. A new stem was provided for the high pressure valve. New springs were provided for the water valves. The engine was repainted.

### BOILERS AND FURNACES.

All necessary repairs were made to the bridge walls and all brick work, arch plates, doors and grate bars of all furnaces. The flues of boiler No. 8 were rolled and caulked. The defective tubes of each furnace were removed and replaced when it was necssary to do so.

### PIPING AND STEAMFITTING.

All valves on the main steam pipe were reground and fitted. New piping was provided for the water columns of each boiler. The pipe covering on a portion of the main header was renewed.

### ELECTRIC LIGHT SYSTEM.

Two new electric lamps were installed and all broken lamp globes, etc., were renewed.

### MISCELLANEOUS.

The team scale was overhauled and repaired.

### RECOMMENDATIONS.

A cement sidewalk should be built on Ashland avenue for the entire length of the station property. A new 35 K. W. engine and generator should be installed. The station should be provided with a connection for securing current for lighting purposes in cases of emergency. The boiler room roof should be repaired, and the interior of the boiler room should be painted and whitewashed. A railroad switch track should be extended into the station property for the purpose of handling coal by cars. The water tower should be painted, and the stone work should be cleaned. A special high pressure fire pump with necessary piping and connections should be installed for fire protection.

## CENTRAL PARK AVENUE PUMPING STATION.

FRED GIELOW, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

The tile sewer pipe of the main sewer was removed and a new cast iron sewer pipe was laid.

The window sashes of the entire building were refitted.

The gutters and down spouts on the west and north face of the building were renewed and all loose tile was reset.

Necessary repairs were made to the sky lights of the engine room.

### ENGINES AND PUMPS.

No. 1 engine was stopped February 10 and the following repairs were made: Placed 10 new brass condenser tubes in the condenser; overhauled the air pump; packed all of the high pressure valve stems; installed 200 new rubber valves in water end; packed the compensating plungers, balancing plungers, low pressure cylinder rods and the accumulator.

September 15 a crack developed in the second receiver head; the same was removed and a new head was fitted in its place. The Westinghouse air pump was given a general overhauling.

July 15th the northwest compensating cylinder was cracked; the same was removed and a new compensating cylinder was fitted in its place.

No. 2 engine was stopped March 8th for general repairs. Removed 350 old rubber valves from water end of the pump and replaced the same with 350 new valves and brass springs. Packed the compensating system accumulator, high pressure valve stems, balancing plungers, and main water plungers. Removed 22 leaky condenser tubes and replaced the same with new brass tubes. New brasses were made and fitted to the air pump connections. The check valves in the 36-inch dicharge pipe were removed and repaired in order to make them water tight.

No. 3 engine was stopped September 18th and the following repairs made: Overhauled the condenser; removing 25 leaky tubes and replaced the same with new brass tubes. Overhauled the air pump and connections. Put in 280 water valves and 170 new brass springs in the water end of the pump. Packed the compensating system, accumulator and ram, high pressure valve stems, low pressure cylinder rods, jacket valves, and the balancing plungers. The Westinghouse air pump was given a general overhauling.

No. 4 engine was shut down August 2nd in order to replace ten broken water valves and six broken brass valve guards and stems. New gaskets were placed in the high pressure cylinder heads. One new brass body accumulator pump was made and attached to the engine; the main water plungers, balancing plungers, accumulator and compensating system were repacked.

September 3rd the flanges on the 6-inch distributing line on the compensating system cracked. New extra heavy flanges were fitted and connected to the system and the distributing line was securely anchored to the building wall in order to support the same and prevent vibration. The attached air pump on this engine was reconstructed, parts that were weak were strengthened, and the connections were made more rigid. Twenty-four new rubber valves were placed in the air pump. Twenty leaky condenser tubes were removed and replaced with new brass tubes. Two new iron grating platforms and railings were placed around the suction and the discharge gate valves.

One new Worthington bilge pump of the duplex type was connected up in engine room pit. Boiler fed pumps Nos. 1 and 2 were overhauled and the following repairs were made: Two new sets of phosphor bronze water plungers; new brass valves and guards; new links and pins and new crosshead forks were installed and the steam valves were scraped and refitted. The steam and water ends of both pumps were packed. No. 3 boiler feed pump valves and seats were faced off and the plungers and steam end were packed.

## BOILERS AND FURNACES.

Fifty Hawley furnace tubes were removed from the furnaces and replaced with new tubes. Connected up a 3-inch pipe line to boilers Nos. 3, 4, 5 and 6 for the purpose of equalizing the water level when the boilers are operated in batteries. New grate bars were placed under boilers Nos. 1, 3 and 5. The discs in the Hawley blow-off valves were all removed and replaced with new discs. The brick furnace settings and linings of the boilers were given a general overhauling and are at present in first-class order. Fifteen defective tubes were taken out of boilers Nos. 1 and 2 and replaced with new tubes.

### COAL CRUSHING AND CONVEYING PLANT.

The new Link Belt coal crushing and conveying plant has been in successful operation for the year 1909. The plant gave excellent satisfaction and required but small expense for repairs during the year.

### ELECTRIC LIGHTING PLANT.

The 16 K. W. generator was thoroughly overhauled. The fields and armature were rewound and the engine was overhauled. This plant is apparently in good condition at the present time, but is carrying an excessive overload.

### ASBESTOS COVERING.

The three live steam purifiers on the six old boilers were recovered with new asbestos fireproof covering. The superheater lines leading to and from the six boilers had considerable covering renewed. The new heating system lines leading to the wash rooms and coal crusher engine room were newly covered.

### RECOMMENDATIONS.

The electric lighting plant at this station is excessively overloaded since the new Worthington engine and new boilers have been wired for electric light. The generator is a 16 K. W. unit and is entirely too small for the load carried at the present time. A new plant of at least 35 K. W. should be installed in place of the 16 K. W. unit.

The outside terra cotta of the walls should be cleaned. The terra cotta settings should be painted up with cement mortar. The outside woodwork in building should be repainted. Something should be done to beautify the north end of the station between the railroad tracks and the station building.

Two iron grated platforms including railings and ladders should be placed at each end of No. 4 engine condenser so the same can be easily reached when repairs are required on the condenser. At present wooden scaffolds are erected and they are very unsightly.

The galvanized iron gutters and down spouts on the roof of the building should be removed, as the same are leaking and are beyond repair, and they should be replaced with copper gutters and down spouts. The tile roofing should be made water tight.

The No. 2 Worthington pumping engine, electric light plant, office and wash rooms and the boilers and all piping should be re-painted. The six old boilers and the three live steam purifiers should be covered with planished iron.

An electric car mover should be installed to handle coal cars.

## SPRINGFIELD AVENUE PUMPING STATION.

PHILIP PETRIE, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

Extensive repairs were made to the sheet iron work of the engine room roof, which was in a very leaky condition. Some of the terra cotta trimming of the building and window sill course of the same were reset. The interior walls of the engine room from the basement floor to the roof and the under side of the roof and the girders of the same were painted.

In August a fire in the coal storage shed caused slight damage to the same. The damage was immediately repaired.

A concrete bumping post was built in at the end of the switch track.

### ENGINES AND PUMPS.

ENGINE No. 1.—During April main pumps were gone through, heater repaired of leaky tubes, and three new tubes put into condenser, and condenser packed and made tight.

In July main pumps were overhauled and foundation bolts on main pumps tightened up.

In August replaced broken tube in condenser with a new one and put new liners in side rods of the main plungers.

In September the main pumps and condenser were overhauled. The main water plungers were repacked. Metallic packing was placed in high and intermediate glands.

In December packed side plunger rods and balancing plungers. Packed accumulator and main throttle valve. Overhauled the main pumps.

ENGINE No. 2.—In January packed the valve stems throughout the engine. In April overhauled the main pumps. Packed the low pressure rods and repaired all leaky tubes of the heater and condenser. In May overhauled main pumps and the condenser. Put liners in on side plunger rods and replaced broken stud of the compensator cap. In September overhauled main pumps and condenser. Repacked side plungers and accumulator and put new metallic packing in glands of the brass compensator sleeves. In November packed main plungers, balancing plungers, also repacked accumulator and compensator sleeves. Re-cut oil grooves in compensator caps and replaced broken stud in compensator bearing. Overhauled the main pumps. Put in new side rod connecting main plunger to crosshead to take the place of a broken rod.

ENGINE No. 3.—In February repacked compensator plungers. In June packed compensator sleeves with metallic packing. In July overhauled main pumps and put three new tubes in the condenser and repacked the same. Tightened up the compensator bearings. Put new gaskets on all cylinder heads after repairing loose piston in the intermediate cylinder. Metallic packing was inserted in the high pressure and intermediate pressure glands. In October overhauled the main pumps. In December packed the brass sleeves of the compensator.

ENGINE No. 4.—In March repacked the main plungers, balancing plungers, compensator plungers, and sleeves, side plunger rods and the air pump. Overhauled and cleaned the condenser. In June packed balancing plungers with metallic packing. Overhauled the main pumps. Put new bolts in auxiliary compensators. In October overhauled main pumps, cut out three valve seats and replaced the same. Five defective valve guards and 350 defective valve springs were removed and replaced. Repaired auxiliary compensator cylinders. Renewing all packing of the accumulator. Moved accumulator pump and repacked the same throughout. Cleaned the condenser and replaced four defective tubes. In December overhauled the main pumps and renewed 33 defective valves and 55 defective springs. Cleaned out condenser and replaced two defective tubes. Packed the air pump and made new joints under the four high pressure cylinder heads. Overhauled the accumulator pump.

### BOILERS, FURNACES AND PIPING.

The two new boilers are in first-class condition and outside of a few minor repairs on the furnaces have caused no trouble whatever. On the other six old boilers the tubes in all of them caused considerable trouble and have been re-rolled so often as to leave tubes very thin and liable to give out at any time. I have taken up this subject in my recommendations.

The furnaces to all the boilers have had the usual repairs when necessary, consisting of renewal of tubes and linings, etc. One of the headers in the Hawley furnace on No. 3 boiler developed a crack and has been repaired by patching the same. Up to the present the patch has remained tight.

The feed water purifiers have all been overhauled, as occasion required. The feed water piping on the purifiers for boilers Nos. 5, 6, 7 and 8 has been renewed between the purifiers and the boilers.

The piping around the station has been renewed where necessary and is in good condition.

The fire proof covering on the engines, boilers and piping throughout the station is in first-class condition, having been thoroughly overhauled during the year.

### COAL HANDLING PLANT.

The conveyor and crushers engines were generally overhauled during the year. Twelve defective "C" clamps and bucket shafts were replaced in the conveyor plant.

### ELECTRIC PLANT.

During June a new piston rod was placed in the electric light engine. The crosshead crank pin and pillow block brasses were re-babbitted twice during the year.

In connection with the lighting system, I would state that the City Electricians are now completing the wiring for the purpose of bringing outside emergency current into the station.

### BOILER FEED PUMPS.

In April the plungers on No. 2 were turned up and repacked. The brass valves and seats were refaced. In August the valves and seats were refaced. In December the plungers on No. 3 pump were turned up and repacked, the valves and seats refaced and all packing renewed.

### BILGE PUMPS.

In June the main plungers were repacked and steam valves reset. The valves of the water ends were refaced and all packing renewed. In December packed the main plungers, put in two new bell rings in the steam ends and overhauled the valves in water end. The steam and water ends were refaced. The above work was on large bilge pump. In July repacked the steam and water ends of the small bilge pump. In August the dry vacuum pump was thoroughly overhauled.

## RECOMMENDATIONS.

### BUILDINGS AND GROUNDS.

Repairs should be made to the bearing points of the main roof trusses on the north and south walls of the engine room.

All of the terra cotta work of the cornice and overhang should be pointed up and securely sealed, after which the tile and brick work should be cleaned.

The outside iron work and all outside wood work of the window and door frames of the entire building should be repainted. The coal sheds should be repainted.

Repairs should be made to cement walks.

All wood and iron work on the interior of the boiler room should be repainted and the walls whitewashed.

### ENGINES AND PUMPS.

Repaint all of engines Nos. 1, 2 and 3 and all auxiliaries of the same. Repaint the water end of No. 4 engine. Repaint the well cylinder and platforms connecting all of the engines.

A new plunger should be placed in the water end of the accumulator ram of No. 1 engine.

Engine No. 2 requires a new intermediate cylinder.

Engine No. 3 requires one new intermediate cylinder, and all of the links in the main valve motion should be rebushed.

The steam cylinders of the three 20 million gallon engines should be covered with planished steel.

All exposed piping in the engine room should be repainted. All hand operated valves on the suction and delivery pipes should be equipped with an electrical or hydraulic device for quick opening and closing of the same.

### BOILERS AND FURNACES.

Boilers Nos. 3, 4, 5, 7 and 8 require a complete set of new tubes. The boiler fronts and all piping in the boiler room should be repainted. A by-pass similar to that provided from the south battery of boilers should be provided from the north battery.

### COAL HANDLING PLANT.

The entire conveyor tram should be overhauled and the worn parts renewed. The coal bunkers should be elevated and extended, and down spouts for the direct feeding of the coal into the furnaces should be provided.

Provisions should be made for handling the ashes with the coal conveyor.

All iron work of the storage hoppers should be repainted.

In order to facilitate the handling of coal cars an electric driven car puller should be provided.

One new 35 K. W. electric light engine and generator should be installed, as the present machine is heavily overloaded.

## HARRISON STREET PUMPING STATION.

MR. WILLIAM SULLIVAN, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

Two new eight-foot by twelve-foot skylights were built into the roof over the coal storage shed, and a portion of the tar and gravel roof was recoated. A section of the coal shed roof was rebraced by placing a new twenty-eight-foot by fourteen-inch beam and by providing a new iron post under the same.

### ENGINES AND PUMPS.

The valve motion on both of the engines at this station was overhauled and repaired. Where it was found necessary the steel pins were trued and the bushings were refitted. Eighteen new brass key heads were fitted to the valve rods. New stems were provided for three valves. The main pumps were fitted with twelve hundred new valves. A total of forty-two six-inch new rubber valves were placed in the condensers. The air pump rod of one engine was bushed and two sets of packing rings were fitted to the piston of the same. The barrels of both air pumps were trued up and rebraced. Two new reducing valves were placed on the jacket system.

### BOILERS AND FURNACES.

New hanging arches were built in the furnaces of both boilers, and the furnaces were rebuilt. The chain grates were overhauled, and new links and bushings were fitted to the rollers of the same. The gearing and bearings of both chain grates were overhauled and repaired..

### PIPING AND STEAMFITTING.

The by-passes on the pumps of the west engine were renewed. New piping was provided to and from the steam traps of both engines. Changes were made on the piping from the engine boiler feed pumps to the receiving tank. Renewed the drip pipes from the main header and from the chain grate stoker engines. Two extra heavy valves were fitted to the feed water piping and the same was changed to make the piping from the boiler feed pumps more direct and to do away with air pockets. The piping from the purifiers to the boilers was cleaned out and replaced. The water columns of both boilers were overhauled.

#### COAL AND ASH HANDLING PLANT.

The ash elevator was overhauled and twelve buckets and a number of links and pins were renewed. New bushings were fitted to the sprockets boxes. A new steel driving belt was provided from the pulley on the chain grate stoker engine. Minor repairs were made on the iron spout which leads to the yard.

#### MISCELLANEOUS.

A portion of the platform of the team scale was renewed. The bearing and beams were checked and new bolts provided where necessary. A new bushing was fitted to the spindie of the waste washing machine and the bearings were trued up. Minor repairs were made to the strainers in the oil filter.

#### RECOMMENDATIONS.

Replace all pins of the valve motion on both engines. Lay a cement floor in the boiler room in the space formerly occupied by the old boilers. Provide a new roof for the boiler room and paint side walls, window and door frames, boiler fronts, piping, etc. In the engine room the under surface and the trusses of the roof and all walls, galleries, stairs, window and door lining, etc., should be repainted. The window and .door linings of the outside of the entire building should be repainted. The entire basement and sub-basement of the engine room should be whitewashed. The building and engines should be wired for incandescent lights and an engine and dynamo installed for operation of an independent lighting system within the station. A connection should be provided for electric current from an outside source for use in cases of emergency.

### LAKE VIEW PUMPING STATION.

MR. FRED D. PARKER, CHIEF ENGINEER.

#### BUILDINGS AND GROUNDS.

During the year the construction of the new engine room on the east of the station was completed and will be reported on by the Construction Division.

In the engine room of the old building repairs were made to the brick walls. All loose and broken slate of the roof was repaired. A considerable portion of the wood floor of the engine room was renewed. Necessary repairs were made to the window casings and frames of the entire building. The broken glass of the entire building was replaced, and clear glass was placed in the skylight over the boiler room. The walls and under side of the roof of the boiler were repainted. A new tar and gravel roof was provided for the boiler room and coal shed. The plank roadway in the rear of the coal shed was entirely renewed. The cement floor of the coal shed was relaid. The board fence on the north line of the grounds was repaired and repainted.

The grounds around the building were graded and resurfaced with black soil. A cinder driveway was built on the north line of the city property in the space between the fence and the coal storage shed.

### ENGINES AND PUMPS.

ENGINE NO. 1.—The steam valves were fitted with a set of new dies and hook plates. New brasses were installed on the short connecting rods. The walnut lagging was overhauled. The valves of the water ends were entirely renewed.

ENGINE NO. 2.—Two sets of new brasses were fitted on the low pressure crosshead pins, two on the high pressure beam pins, and two on the low pressure beam pins. The valves in the water end were renewed. The water ends were repainted.

ENGINE NO. 3.—The valves in the water ends were renewed. The water ends were repainted.

ENGINE NO. 4.—New brasses were fitted on the air pump rods, and on the short connecting rods. A new pin was provided for the air pump crosshead. The water ends of the pumps were repainted.

### BOILERS AND FURNACES.

The boiler fronts and all piping in the boiler room was repainted. The fireproof covering on the back heads of the four Scotch marine boilers was replaced and all broken pipe covering was renewed. Some of the tubes of the Hawley down draft furnaces were expanded and necessary repairs were made to the brickwork and grates. One new 7x4½x10-inch Fairbanks-Morse Duplex boiler feed pump was installed in the boiler room. The old feed water pumps were thoroughly overhauled and repaired.

### RECOMMENDATIONS.

The team scales should be entirely renewed. The combustion chambers on six Scotch marine boilers should be provided with two-foot addition in order to provide against destruction of the tubes due to the intense heat in the chamber.

## ROGERS PARK PUMPING STATION.

MR. WILLIAM FLEMING, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

Plumbing repairs were made to the boiler room toilet, and all of the sewer pipes and catch basins were cleaned. A new toilet was installed in the engine room. The lower portion of the iron work of the stand pipe was scraped and repainted. A new roof was placed on the low building in the rear of the old boiler room and repairs were made on the iron roof of the engine room. The roof of the cottage in the rear of the station was entirely renewed. Miscellaneous repairs were made to the engine room floors and to the doors and windows of the coal storage shed.

The grounds to the east of the station were graded.

The construction of the new boiler room and installation of the boilers will be reported by the Construction Division.

### ENGINES AND PUMPS.

The two pumpng engines were overhauled and a new set of valves were placed in the water ends. The boiler feed pump was overhauled and repaired. The air compressor engine was thoroughly overhauled and was fitted with new connecting rods and rings. The crank shaft and journals were fitted with new brasses and the entire engine was lined up. The lake end of the suction pipe which supplies the main engines was overhauled and repaired.

### BOILERS AND FURNACES.

A few minor repairs were made to the old boilers in order to keep them in service until the new boiler installation was completed. A new heater was installed and all necessary piping and connections were provided to arrange for its connection to the piping system from the new boiler installation.

### MISCELLANEOUS.

The tanks of two filters were repaired and new filter beds were provided. Two new alum tanks and an iron platform for the same were installed.

### RECOMMENDATIONS.

The water tower and the interior of the station should be repainted. A driveway should be constructed from the street to the north end of the boiler room.

## NORWOOD PARK PUMPING STATION.

MR. P. H. TIERNEY, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

The tar and gravel roof of the station was repaired and recoated. New roof gutters were placed on the south side of the building, and the sides of the building were recovered with new corrugated sheeting. A new apron and waste head were placed on the exhaust heads.

### ENGINES AND PUMPS.

The deep well pump was overhauled and fitted with a new eccentric rod and a new set of pump leathers. The pump barrel was hoisted out of the well, and the foot valves in the same were renewed.

### BOILERS AND FURNACES.

The brickwork on both furnaces was overhauled and renewed.

### RECOMMENDATIONS.

A new set of tubes should be placed in No. 1 boiler.
The station should be wired for electric light.
The building and stand pipe should be repainted.

## WASHINGTON HEIGHTS PUMPING STATION.

MR. JOHN THOME, CHIEF ENGINEER.

### BUILDINGS AND GROUNDS.

New piers were built to carry the guy cables of the smoke stacks and the cables of the same were renewed. Miscellaneous repairs were made to the plumbing, piping and fixtures.

### ENGINES AND PUMPS.

LUDLOW-DUNN-GORDON PUMPING ENGINE.—The steam end of this pump was overhauled. The piston rods were turned up and the glands were rebushed. All valves and seats were refitted. The valve rods were turned up and the glands of the same were rebushed. The brasses of the links and pins were refitted. A patch was placed over a cracked portion of the steam cylinder.

ALLIS-CHALMERS PUMPING ENGINE.—A section of the receiver was purchased. Miscellaneous repairs were made to the toe plates and oil pump.

### BOILERS AND FURNACES.

The wedge walls of boilers Nos. 1 and 2 were rebuilt. New jets were proved for the smoke burner. Repairs were made to the blow-off piping of both boilers. One boiler flue was recaulked.

### MISCELLANEOUS.

The team scale was overhauled and repaired to pass inspection. A leak on the inlet pipe of the tower tank was repaired and necessary frost proof casing provided.

### RECOMMENDATIONS.

The feed water pumps and the air pumps should be generally overhauled and repaired. The water ends of both engines should be painted. The interior and exterior of the engine and boiler room should be repainted. The tower tank should be repainted. Additional coal storage facilities should be provided.

## FULLERTON AVENUE STATION.

### SEWAGE PUMPING STATION.

MR. P. E. MCDONNELL, CHIEF ENGINEER.

### ENGINES AND PUMPS.

The following are some of the repairs made to the engines and pumps of this station:

Two of the hot well cylinders were bored out. The east crank pin box was rebabbitted and refitted. A new piston rod was provided for the east air pump. Two sets of cast iron packing rings were made for the engine pistons. New bronze castings were fitted into the lower half of the boxes of the air pump short arms. The air pumps pistons were provided with four new cast-iron packing rings and two new cast-brass plunger heads and followers for the same. The steel engine pit was scraped and painted.

### BOILERS AND FURNACES.

**REPAIRS.**—The brickwork under the three furnaces was entirely renewed.

### RECOMMENDATIONS.

The outside of the entire building should be repainted and the interior should be whitewashed and the door and window linings repainted. A team scale should be installed. The station should be wired for electric light. A telephone should be installed. The north wall of the building should be rebuilt.

## CARTER H. HARRISON SENIOR PUMPING STATION.

### FOOT OF E. 39TH STREET.

MR. FRED W. SADLER, CHIEF ENGINEER.

The total theoretical pumpage of the station for the year 1909 is as follows:

| | | |
|---|---|---|
| Sewage and drain water ............ | 32,057,915,300 | gallons. |
| Lake water from shore inlet......... | 134,732,240,200 | " |

The City of Chicago operated four pumping engines and the entire boiler and coal handling equipment and furnished power and supplies on agreement to the Sanitary District of Chicago to permit of their operation of the two fresh water screw pumps.

### BUILDINGS AND GROUNDS.

No repairs were made to the buildings during the year. The work done on the buildings and grounds was under the supervision of the Construction Division and is reported by that Division.

### ENGINES AND PUMPS.

No. 1 ENGINE.—The plates of the main radial truss bearing was straightened and the bearing was reground into the plate. The cross heads were lined up. The valve gearing was stripped and overhauled. Metal oil splashes were fitted to the frame of the engine.

No. 2 PUMPING ENGINE.—Two steel bracket bonnets were renewed. The valve gearing was overhauled and metal oil splashes were provided.

Nos. 3 AND 4 PUMPING ENGINES.—The hooks of the valve gearing were slotted to provide for more clearance, and the entire gearing was overhauled. The engine was fitted with metal oil splashes.

BOILER FEED PUMPS.—The valves of both pumps were re-faced and the seats were bored out and re-ground.

CONDENSER CIRCULATION ENGINES PUMPS.—These engines were completely overhauled. The housings of the pump were bored out and new shafts were installed. The suction for these pumps was removed from the main sewer channel and was placed in a sump into which fresh screened lake water was admitted.

### BOILERS AND FURNACES.

Two defective tubes were renewed in each of the six boilers. Minor repairs were made on each furnace.

### PIPING AND STEAMFITTING.

The Allis-Chalmers Company completed the renewal of the main steam header to comply with the provisions of the specifications and contract for the installation of the machinery.

### COAL AND ASH HANDLING PLANT.

The Jeffrey Manufacturing Company made some required alterations and additions to the plant in order to fulfil the requirements of the specifications and contract.

## LAWRENCE AVENUE PUMPING STATION.

MR. PATRICK ENRIGHT, CHIEF ENGINEER.

The operation of the pumping engines of this station for the year was as follows:

One triple expansion condensing Corliss engine direct connected with a screw type pump and has a rated capacity of 388,800,000 U. S. gallons per twenty-four hours against a head of four feet. The suction of the pump is connected to a conduit which takes fresh water from an intake located in Lake Michigan at a point about one thousand feet from the shore line at Lawrence avenue. The discharge is connected with the Lawrence avenue conduit. Operation of this engine forces fresh water through the conduit to be discharged in the north branch of the Chicago River at Lawrence avenue. This engine was started on May 28, 1909, and operated on an average of eight hours daily until July 26, from which date the engine has been operated continuously.

The theoretical pumpage for 1909 was 34,839,380,000 gallons.

Two horizontal compound condensing Corliss engines direct connected through single crank pin to vertical shaft and operating two submerged single suction centrifugal pumps, each having a capacity of 85,000,000 gallons per twenty-four hours against a head of five feet. The pumps are used chiefly for pumping storm water.

The combined pumpage for 1909 was 4,030,400,000 gallons.

One horizontal compound condensing Corliss engine direct connected through single crank pin to vertical shaft and operating one submerged single suction pump, having a rated capacity of 22,000,000 gallons per twenty-four hours against a head of 9.75 feet.

The theoretical pumpage for 1909 was 7,358,400,000 gallons.

The theoretical pumpage of all engines amounted to 46,228,180,000 gallons.

For the results of the official test of the above engines see report of the Bureau of Engineering, Construction Division, 1909.

During the year one new steam arm, one new bonnet, and one new valve stem were placed on the high pressure cylinder of No. 1 engine. The two boiler feed pumps were overhauled, the plungers were turned up, and the valve seats were machined.

### BUILDINGS AND GROUNDS.

A new concrete foundation was built under the receiving tanks. A number of drains were laid in the engine pits. The roof gutters were repaired. The grounds in the rear of the station were graded.

### BOILERS AND FURNACES.

A defective brick back arch of No. 1 boiler was renewed and one defective tube was replaced. The low water alarms were overhauled and adjusted. A new grate shoe was placed in furnace of No. 1 boiler and new aprons were fitted to the furnaces of Nos. 1 and 2 boilers. The boiler fronts were repainted.

### PIPING AND STEAMFITTING.

About twelve feet of defective high pressure steam pipe was renewed. The blow-off from the purifiers was fitted with a new asbestos cock.

### ELECTRIC LIGHT SYSTEM.

Additional lights were provided for all of the pumps and for the gauge boards and tanks of the oiling system.

## LAKE CRIBS.

MR. DANIEL DONOVAN, CITY DIVER, IN CHARGE.

### GENERAL.

On October 4, 1909, the City Council authorized the employment of an additional assistant keeper for each crib so as to provide for the presence of not less than two men on each crib at all times.

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Five hand-pump fire extinguishers were provided for each crib and have been placed in conspicuous places within the structures for use in case of fire.

Belt type U. S. inspected life preservers were provided for each crib and in addition life ring buoys and life lines have been placed within reach of the crib landings.

Each crib has been provided with oil tanks and pumps for proper handling of the oil used on the crib.

## TWO-MILE CRIB.

CARL JACOBSON, KEEPER.

All hollow spaces in the stone filling of the crib breakwater were filled with rip-rap, and all broken planking of the breakwater dock was renewed.

The north side of the frame building over the Ross and Ross seven-foot shaft was strengthened and renewed, and the entire shaft house was repainted. Miscellaneous repairs were made to the wood bulkhead platforms and storage shed.

## FOUR-MILE CRIB.

JOSEPH COSGROVE, KEEPER.

Repairs were made on the turbine fog-bell ringer by the erecting in place of a new channel beam support and lower bearing, also new shaft, hub and propeller blades.

A new derrick was built and the same was erected and securely fastened in place on the deck of the crib landing.

The iron work of the well room and engine room was entirely repainted.

The deck used to support the life boat was entirely rebuilt and arranged for speedily handling the boat in case of emergency.

The stone pockets of the crib landing were refilled with large and small rip-rap stone. Minor repairs were made to the blow-off piping of each boiler.

## CARTER H. HARRISON CRIB.

GILBERT JOHNSON, KEEPER.

A lower channel beam support and brass bearing with new turbine wheel and supports was erected in place on the fog-bell ringer.

The ceiling of the crib entrance, iron work of the well room and cylinders, walls and ceiling of the engine room and all outside window frames, sash and screens were repainted.

The windows of the well room were refitted and equipped with new safety sash chain.

The drain pipe from the parapet in front of the east doorway was renewed.

The copper flashing around the main chimney was extended and repaired.

Repairs were made to the water column and blow-off piping in order to comply with the order of the Boiler Inspector.

## 68TH STREET CRIB.

THOMAS WARD, KEEPER.

During the latter part of June, 1909, the armored telephone cable communicating with the crib was broken at a point about 300 feet east of the shore line at the foot of 68th street. The broken ends were located and temporary repairs were made pending the arrival of a piece of armored cable of sufficient length to replace the shore end. Complete repairs were finished during the month of October.

The plank decking of the north face of the breakwater was destroyed during a heavy storm. The cross timbers were leveled up and all of the stone pockets were refilled with large and small rip-rap. Heavy yellow pine timbers were securely fastened in place.

## LAKE VIEW CRIB.

PATRICK H. GRIFFIN, KEEPER.

The following parts of the crib were repainted:

Ceiling of main entrance.

Ceiling and sidewalls of entry to the second floor.

Frames and sash, storm windows and screens of each window.

Iron work of the well room and piping, pumps, boiler fronts, etc., of the engine room.

A reinforced concrete step was built in front of main entrance. One twelve-foot section of the breakwater in front of the crib entrance was tied in with a concrete dressing.

A structural iron platform was erected around the cylinder in the well and the same was covered with oak in the form of grating to provide a platform for handling the water screens.

The iron cylinder was covered with iron grating built in three sections.

A brick pier was built under the blow-off of the boiler in order to comply with the rules of the Boiler Inspector.

## BREAKWATER CRIB.

The head house and the greater portion of the timber construction of the intermediate crib located at the southwest end of the Government breakwater was destroyed by fire on the morning of July 15, 1909. The damage was repaired as follows: The south wall of the filler section between the crib proper and the breakwater was rebuilt from the water edge. New cross braces were built in and leveled up. The stone pockets were refilled to the grade of the decking. New yellow pine decking was securely fastened in place.

On the crib proper such portions of the wall on the south and west face as were burned to the water's edge were entirely removed and rebuilt, being securely crossbraced and jointed to such portion of the north half as was found to be of sufficient strength to let stand.

The south half was built up one course above the breakwater section. All stone pockets were filled to grade of the decking and the

same was secured with heavy yellow pine decking, which was bolted in place so as to form a deck over the entire surface, thereby covering in the well and cylinders.

Four courses of burned timber and braces were removed from the north half and the same was leveled up; stone pockets were refilled, and heavy yellow pine decking provided and securely fastened in place.

The storms of the fall of the year prevented repairs to the sheeting of the north face.

# COMPARATIVE ANALYSIS OF PUMPING COSTS, 1904-1909.

## COST IN CENTS, COAL IN POUNDS, FOR PUMPING ONE MILLION GALLONS ONE FOOT HIGH.

| PUMPING STATION | COAL — Weight in Pounds | | | | | | COAL — Cost in Cents | | | | | | SALARIES | | | | | | Oil, Waste, Grease and Packing | | | | | | Miscellaneous and Supplies | | | | | | TOTAL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
| 14th St | 14.2 | 13.6 | 12.2 | 12.0 | 13.3 | 13.2 | 2.05 | 1.87 | 1.52 | 1.41 | 1.69 | 1.73 | 1.51 | 1.43 | 1.15 | 1.22 | 1.32 | 1.36 | .07 | .06 | .07 | .13 | .14 | .10 | .25 | .23 | .18 | .12 | .12 | .14 | 3.88 | 3.59 | 2.92 | 2.91 | 3.27 | 3.33 |
| 68th St | 15.5 | 17.2 | 16.3 | 16.8 | 17.2 | 16.4 | 1.84 | 2.04 | 1.82 | 1.36 | 1.53 | 1.52 | 1.72 | 1.70 | 1.75 | 2.06 | 1.92 | 1.87 | .07 | .08 | .10 | .10 | .09 | .11 | .28 | .17 | .21 | .10 | .11 | .13 | 3.91 | 3.99 | 3.88 | 3.62 | 3.65 | 3.63 |
| 22nd St | 18.4 | 18.2 | 18.0 | 17.3 | 17.1 | 17.1 | 2.54 | 2.37 | 2.20 | 2.08 | 2.14 | 2.25 | 1.91 | 2.07 | 2.08 | 2.45 | 2.19 | 2.28 | .06 | .07 | .10 | .07 | .07 | .05 | .26 | .32 | .21 | .21 | .15 | .17 | 4.77 | 4.83 | 4.59 | 4.81 | 4.55 | 4.75 |
| Chicago Avenue | 20.0 | 17.9 | 15.9 | 13.0 | 12.5 | 12.5 | 2.84 | 2.36 | 1.96 | 1.56 | 1.57 | 1.69 | 2.45 | 2.21 | 2.28 | 2.25 | 2.05 | 1.88 | .10 | .09 | .11 | .10 | .09 | .09 | .33 | .32 | .30 | .24 | .18 | .16 | 5.72 | 4.98 | 4.65 | 4.15 | 3.89 | 3.82 |
| Springfield Avenue | 15.2 | 14.4 | 14.4 | 13.5 | 13.9 | 13.8 | 1.93 | 1.67 | 1.53 | 1.36 | 1.46 | 1.57 | 1.67 | 1.65 | 1.63 | 1.74 | 1.66 | 1.62 | .05 | .08 | .12 | .12 | .09 | .13 | .24 | .15 | .11 | .06 | .04 | .04 | 3.89 | 3.55 | 3.39 | 3.28 | 3.25 | 3.36 |
| Central ParkAve | 14.6 | 15.8 | 14.1 | 13.0 | 13.7 | 14.1 | 1.83 | 1.94 | 1.52 | 1.30 | 1.45 | 1.60 | 1.78 | 1.88 | 1.71 | 1.81 | 2.05 | 1.52 | .10 | .08 | .11 | .12 | .14 | .10 | .14 | .21 | .11 | .11 | .12 | .12 | 3.85 | 4.11 | 3.48 | 3.31 | 3.76 | 3.34 |
| Harrison Street | 16.1 | 14.6 | 13.5 | 14.1 | 14.3 | 14.4 | 2.16 | 1.80 | 1.61 | 1.44 | 1.47 | 1.58 | 2.21 | 2.16 | 1.99 | 2.01 | 1.97 | 1.98 | .10 | .13 | .12 | .07 | .12 | .10 | .29 | .42 | .31 | .24 | .22 | .20 | 4.76 | 4.51 | 4.03 | 3.76 | 3.78 | 3.86 |
| Lake View | 16.4 | 15.6 | 16.5 | 17.9 | 18.1 | 15.8 | 2.46 | 2.24 | 2.45 | 2.70 | 2.74 | 2.37 | 2.68 | 2.62 | 2.49 | 2.96 | 3.24 | 2.99 | .14 | .14 | .21 | .19 | .21 | .23 | .31 | .20 | .20 | .12 | .09 | .09 | 5.50 | 5.28 | 5.35 | 5.97 | 6.28 | 5.68 |
| Average | 16.2 | 16.0 | 15.0 | 14.4 | 14.8 | 14.5 | 2.18 | 2.04 | 1.79 | 1.56 | 1.68 | 1.72 | 1.92 | 1.87 | 1.79 | 1.95 | 1.93 | 1.82 | .09 | .09 | .11 | .11 | .11 | .11 | .24 | .25 | .20 | .14 | .12 | .13 | 4.43 | 4.25 | 3.89 | 3.76 | 3.84 | 3.78 |
| Washington Heights | .... | .... | .... | .... | .... | 43.35 | .... | .... | .... | .... | .... | 6.59 | .... | .... | .... | .... | .... | 18.04 | | | | | | 0.54 | | | | | | 0.84 | .... | .... | .... | .... | .... | 26.01 |
| Norwood Park | .... | .... | .... | .... | .... | 31.35 | .... | .... | .... | .... | .... | 22.22 | .... | .... | .... | .... | .... | 73.15 | | | | | | 0.63 | | | | | | 3.33 | .... | .... | .... | .... | .... | 99.33 |
| Rogers Park | .... | .... | .... | .... | .... | 50.43 | .... | .... | .... | .... | .... | 10.42 | .... | .... | .... | .... | .... | 12.12 | | | | | | 0.61 | | | | | | 0.89 | .... | .... | .... | .... | .... | 24.04 |
| Average 3 small stations | .... | .... | .... | .... | .... | 51.19 | .... | .... | .... | .... | .... | 9.28 | .... | .... | .... | .... | .... | 17.52 | | | | | | 0.58 | | | | | | 0.98 | .... | .... | .... | .... | .... | 28.63 |

| Mont |
|---|
| January |
| February |
| March . |
| April ... |
| May ... |
| June ... |
| July ... |
| August |
| Septemb |
| October |
| Novembe |
| Decembe |
| Total |

| Month. | |
|---|---|
| January . | ,000 |
| February | ,000 |
| March ... | ,000 |
| April ..... | ,000 |
| May ...... | ,000 |
| June ...... | ,000 |
| July ...... | ,000 |
| August .. | ,000 |
| September | ,000 |
| October .. | ,000 |
| November | ,000 |
| December | ,000 |
| Totals | ,000 |
| | ,000 |
| | ,000 |
| | ,000 |
| | ,000 |

## TABLE "A"—MONTHLY PUMPAGE IN GALLONS, 1909.

| Month. | Fourteenth St. Pumping Station. | Sixty-eighth St. Pumping Station. | Twenty-second St. Pumping Station. | Chicago Av. Pumping Station. | Springfield Av. Pumping Station. | Central P'k Av. Pumping Station. | Harrison St. Pumping Station. | Lake View Pumping Station. | Total of 8 Major Stations. |
|---|---|---|---|---|---|---|---|---|---|
| January ....... | 2,250,942,000 | 2,442,808,000 | 1,743,564,000 | 2,239,925,000 | 2,208,963,000 | 2,071,780,000 | 1,054,343,000 | 1,082,807,000 | 15,096,132,000 |
| February ...... | 1,803,798,000 | 2,111,169,000 | 1,565,516,000 | 2,067,635,000 | 1,947,497,000 | 1,902,925,000 | 989,891,000 | 951,319,000 | 13,339,750,000 |
| March .......... | 1,853,763,000 | 2,249,676,000 | 1,616,110,000 | 2,299,997,000 | 1,931,792,000 | 2,158,888,000 | 1,097,501,000 | 1,007,752,000 | 14,215,479,000 |
| April ............ | 2,211,489,000 | 2,164,511,000 | 1,357,429,000 | 1,928,978,000 | 2,171,593,000 | 1,792,030,000 | 1,055,819,000 | 916,171,000 | 13,598,018,000 |
| May ............ | 2,255,113,000 | 2,285,671,000 | 1,486,796,000 | 2,019,376,000 | 2,229,537,000 | 1,941,504,000 | 1,096,688,000 | 993,277,000 | 14,307,962,000 |
| June ............ | 2,063,971,000 | 2,258,231,000 | 1,630,708,000 | 2,013,648,000 | 1,890,346,000 | 2,208,414,000 | 1,023,596,000 | 1,068,610,000 | 14,157,523,000 |
| July ............ | 2,421,857,000 | 2,576,943,000 | 1,746,349,000 | 2,196,712,000 | 2,282,452,000 | 2,084,466,000 | 1,098,197,000 | 1,152,115,000 | 15,559,091,000 |
| August ........ | 2,386,269,000 | 2,624,139,000 | 1,791,458,000 | 2,332,378,000 | 2,261,491,000 | 2,200,176,000 | 1,058,633,000 | 1,209,464,000 | 15,864,008,000 |
| September ..... | 2,351,619,000 | 2,446,140,000 | 1,675,865,000 | 2,336,718,000 | 2,258,744,000 | 2,036,800,000 | 1,060,857,000 | 1,142,094,000 | 15,308,838,000 |
| October ......... | 1,995,100,000 | 2,420,485,000 | 1,706,679,000 | 2,259,608,000 | 2,009,757,000 | 2,153,157,000 | 1,001,778,000 | 1,190,588,000 | 14,736,151,000 |
| November ...... | 2,121,779,000 | 2,199,153,000 | 1,589,046,000 | 1,918,494,000 | 1,971,925,000 | 2,065,270,000 | 696,987,000 | 1,093,621,000 | 13,656,275,000 |
| December ...... | 2,332,357,000 | 2,477,156,000 | 1,849,910,000 | 2,078,281,000 | 2,020,519,000 | 2,199,377,000 | 1,021,661,000 | 1,178,392,000 | 15,157,661,000 |
| Totals ...... | 26,048,000,000 | 28,256,000,000 | 19,758,500,000 | 25,692,000,000 | 25,184,500,000 | 24,815,000,000 | 12,256,000,000 | 12,986,000,000 | 174,996,000,000 |

| | |
|---|---|
| Total Pumpage, Washington Heights.......................... | 409,000,000 |
| Total Pumpage, Norwood Park.............................. | 32,500,000 |
| Total Pumpage, Rogers Park.................................. | 502,000,000 |
| Grand Total ........................................... | 175,939,500,000 |

## WATER PIPE EXTENSION DIVISION.

H. L. LUCAS, SUPERINTENDENT.

The following report and tables show the extent of the work accomplished by the Water Pipe Extension Division during the year 1909. This work being of the same character as that of former years includes the laying of such new supply mains as the growth of the City requires, the laying of feeder mains, repairing leaks in mains and fire hydrants, etc., following up and reporting on complaints relative to water supply, installing taps, cutting off abandoned and leaking service pipes, and in general doing such work as is necessary in the extension and maintenance of the distribution system of the Chicago Water Works.

### PRESENT EXTENT OF SYSTEM.

At the close of 1909 the water pipe system consisted of a total of 2,229.93 miles of water pipe on sizes ranging from three inches to and including 48 inches in diameter. There were also in use 23,339 fire hydrants and 19,337 stop valves.

### CONSTRUCTION.

During the year there was laid under the supervision of this Division a total of 316,188 feet or 59.88 miles of water pipe of various sizes. The water pipe taken up or abandoned during the year amounted to 18.91 miles. The net increase in the water pipe system amounts to a total of 40.97 miles. There was also installed 1,309 fire hydrants and 604 stop valves.

A 24-inch feeder main was laid in Larrabee street from Belden avenue to Fullerton avenue and in Fullerton avenue from Larrabee street to Clark street. This main was installed in order to provide a more direct feeder main connection between the Lake View and the Chicago Avenue pumping stations.

A portion of the new 36-inch, 42-inch and 48-inch discharge piping system for the new engines at the Lake View pumping station was installed. The installation included the placing of two 36-inch and one 48-inch hydraulically operated valves. The plan of the discharge system was prepared by this Division, and consists of a 48-inch header extending parallel with the east face of the new building for its entire length. Each of the four pumps designed for future installation in this station will be connected into this header, and when complete two distribution or feeder mains will be connected to each end. The header will be divided into sections by means of hydraulically operated valves, and each of the feeder mains will be controlled by the above type of valves so that in cases of emergency the engineer of the pumping station may have immediate and effective control over the water mains leading from the station. The north portion of this discharge system was installed during the year in order to provide for the discharge of water from one new pumping engine. The balance of the system will be added as the additional pumping engines are installed.

### PIPE LAID ON DEPOSIT.

The water pipe laid during 1909 on account of deposits made with the City by the property owners benefited by the improvement amounted to a total of 13.88 miles. This is more than twice the amount laid on deposit during 1908, and indicates great activity in the building-up of the new sub-divisions of the City. It is worthy of note that much of this work has been done on the northwest side of the City.

### PIPE LAID BY SPECIAL ASSESSMENT.

The water pipe laid under special assessments spread by the Board of Local Improvements amounted to a total of 86,506 feet, or 16.31 miles. This pipe is laid by contracts which are awarded by the Board of Local Improvements. The plans, profiles and estimates for the work were prepared and all of the work was supervised, inspected and tested by employes of the Water Pipe Extension Division.

The total contract price for this pipe was $104,960.75, and is equal to an average cost of $1.21 per foot. Sixty-two per cent of the total length of pipe laid by special assessment was from eight to twelve inches in diameter.

### WORK DONE ON ACCOUNT OF PAVING.

The work done on the water mains, stop valves and fire hydrants prior to street paving is a very important part of the work performed by this Division. The total length of water pipe laid to replace mains of smaller size in streets about to be paved amounts to 93,618 feet, or 17.73 miles. The pipe thus replaced was nearly all four inches in diameter.

In connection with the performance of this work all worn out fire hydrants are removed and new hydrants are reset. Such fire hydrants as are found to be too small for the service required are removed, and a fire hydrant of a sufficient size is installed in its place.

Stop valves are set where necessary in order to assure better control of the water mains when required in cases of emergency. Such service pipes as are not needed or in use are cut off. Where it is found necessary the water mains are stripped and re-calked, and in general the water mains, service pipes, stop valves and fire hydrants are put in the best possible condition before the street is paved.

A few of the most important pieces of work done on account of street paving were as follows:

Madison street from State street to Market street: A new 12-inch main was laid on the south side of the street, and the old main, which was found to be in bad condition, was abandoned. Additional fire hydrants, which were much needed for fire protection, were placed, additional stop valves were provided, and a large number of old service pipes were cut off and abandoned.

Wabash avenue from Washington street to Randolph street: The 8-inch main was found to have been affected by electrolysis and was in bad condition. Only three buildings were getting water supply from this main. The 8-inch main was abandoned and the service pipes were connected to the 24-inch feeder main. The 24-inch main was stripped and re-calked and all fire hydrants were connected to it.

Randolph street from Michigan avenue to State street: A 12-inch main was laid to replace an old 6-inch main. New fire hydrants and stop valves were placed.

State street from 39th street to 63rd street: Forty-seven fire hydrants were placed, some of which were new installations and others were provided to replace old Ludlow or Holly fire hydrants.

Belmont avenue from Sheffield avenue to Ashland avenue: Three thousand nine hundred and fifty feet of 12-inch main was laid to replace an old water main. The service pipes were reconnected and additional valves and hydrants were installed.

In view of the great extent of the work of replacing old mains and its value to the water system, it seems necessary that provision should be made for the work in the annual appropriation of funds for this Division.

### MAINTENANCE.

During the year 1909, 4,090 leaks in mains, service pipes and fire hydrants were repaired. Twenty-five per cent of these leaks occurred in the First District, which is bounded by Chicago avenue, Sixteenth street, Ashland avenue and Lake Michigan. This district comprises the oldest portion of the City and has the greatest mileage of pipe in proportion to the area.

Complaints and notices of leaks were promptly transmitted to the district forces. Leaks occurring at night are reported directly to the district headquarters through the Police or Fire Departments. Complaints of all kinds which were received and transmitted by the complaint clerk of the Water Pipe Extension Division numbered 8,170.

The necessity of prompt attention to reports of leaks has not been overlooked, and every effort has been made to see that these reports are promptly investigated and the leaks repaired.

The maintenance work also includes the repairing of all defective valves and hydrants, the cutting off of abandoned service pipes, the replacing of defective valves and hydrant basin covers and other miscellaneous repairs to the water pipe system.

### PIPE YARDS AND DISTRICT YARDS.

This Division has four supply yards located as follows:

Pipe Yard "A," Avers avenue and Wabansia avenue.
Pipe Yard "B," 2352 South Ashland avenue.
Pipe Yard "C," 49th street and Union avenue.
Pipe Yard "D," 68th street and Oglesby avenue.

These yards carry a stock of material and tools for use of the construction and repair forces of the Division. Three of the yards are provided with switch tracks, and all of them are well equipped with derricks for the rapid handling of heavy materials.

Pipe Yard "B" was improved during the year by the building of a new wall along the dock line of the slip at the rear of the yard.

this main. The 8-inch main was abandoned and the service pipes were connected to the 24-inch feeder main. The 24-inch main was stripped

derricks for the rapid handling of heavy materials.

Pipe Yard "B" was improved during the year by the building of a new wall along the dock line of the slip at the rear of the yard.

In addition to the pipe yards there is an office and yard in each of the eight Water Pipe Extension Districts. At each point the district force maintains its headquarters and carries a small stock of material for emergency use.

### PROTECTION OF FIRE HYDRANTS.

It has been the practice in Chicago to build a brick basin around the fire hydrant stem, thereby making it easy of access. The exposed stem of the hydrant makes it necessary to fill this basin with manure in order to protect the hydrant from freezing. Besides the first cost of the basin on the hydrant, which is about $30.00, there is an annual cost of filling the basin with manure in the fall and emptying the same in the spring, which in 1909 amounted to about $1.77 per basin.

In the spring of 1909, 22,355 hydrant basins were emptied and in the fall they were filled again with manure, the cost of the work amounting to $34,628.09.

In 1907 the practice of building basins on all fire hydrants was abandoned, and since that time all hydrants have been set without basins, except in locations where the sidewalk space was vaulted. Experiments have also been made extending over a period of three or four years to ascertain the results that can be obtained by filling the old hydrant basins with earth after properly connecting the waste pipe of the basin with the sewer. Out of 118 hydrants thus protected during the last two years not one of them has been found frozen. This method of protecting fire hydrants has proven conclusively that it is more effective and vastly superior to the old plan of filling the basins with manure, which, to say the least, is unsanitary and primitive and does not accomplish the desired results, it having been found that a large percentage of manured hydrants were frozen during extremely cold weather.

### ELECTROLYSIS.

The extent of the action of stray electric currents on the water mains can only be surmised, until more thorough investigations than any which have been made can be carried out. That the trouble exists to a very serious extent in some localities there can be no doubt. In some instances pipes which have been uncovered to repair leaks have shown evidences of the action of electrolysis.

Voltmeter readings were taken between the street-car rails and the water main on Clybourn avenue from Fullerton avenue to Belmont avenue. These readings showed that at certain points there was a flow of current from the water pipe to the rail and to a gas main which was located close to the main. This condition in time may result in extensive pitting and destruction of the water pipe.

At Roscoe street and Western avenue a similar test was made, and it showed a flow of current from the 24-inch water main at this point.

Only a short time before this test was made there was a very bad leak on this 24-inch main, and the pipe was found to show evidences of electrolytic action.

It is planned to thoroughly investigate this subject during 1910, an appropriation having been requested for this purpose.

### INSPECTION OF PLUMBING AND SERVICE PIPES.

A valuable and important part of the work of this Division has been that accomplished by the Plumbing Inspectors. In addition to the regular inspection of service pipe installations these inspectors have made an extensive house-to-house inspection in connection with the water survey work. They have investigated and followed up a large number of complaints of lack of water supply, and have made other special investigations.

The following is a classification and list of inspections made by the Plumbing Inspectors during 1909:

| | |
|---|---|
| Miscellaneous inspections of scattered pipes | 4,604 |
| Street improvements service pipe inspections (special assessment) | 3,254 |
| Street improvement service pipe inspections (private contract) | 1,870 |
| Inspections incident to re-tapping | 4,553 |
| Water surveys (house-to-house inspections) | 30,148 |
| Miscellaneous inspections on complaints, showing cause of trouble: | |
| Temporary lack of pressure on system | 69 |
| Lack of pressure on system (failure to supply third and fourth floor, requiring house tanks) | 37 |
| No cause for complaint and good pressure found on inspection | 40 |
| Water meters out of order | 45 |
| Service pipes obstructed | 60 |
| Service pipes leaking | 115 |
| Service pipes too small | 28 |
| Miscellaneous trouble in service pipes | 17 |
| Leaks and faulty plumbing within premises | 18 |
| Obstruction in pipes within premises | 118 |
| Continuous use of water in other parts of building | 11 |
| Risers in building too small | 12 |
| Roof tanks out of order | 33 |
| Water pipes frozen | 10 |
| Faucets out of order and leaking | 71 |
| Closets out of order and leaking | 167 |
| Leaks in pipes in ground within premises | 118 |
| Leaks in check and waste cocks within premises | 151 |
| Tracing hydrant keys | 7 |
| Miscellaneous leaking fixtures | 121 |
| Total of all inspections made | 45,677 |

### TAPS AND SERVICE PIPE CONNECTIONS INSTALLED.

During the year 1909 there were installed by this Division 14,373 taps and connections of various sizes ranging from ¾ inch up to 12 inches in diameter. Of this number 4,553 taps were used on re-tapping work required mainly by the replacing of mains in streets about to be paved.

### WATER SURVEYS.

The water survey work has been of great importance, aiding in the reduction of waste of water in mains, service pipes and house plumbing, and in collecting data showing the condition of the pipe lines in the districts surveyed. A detailed report of the results accomplished by these surveys accompanies this report.

## HYDRANTS PLACED IN 1909 INCLUDING THOSE USED TO REPLACE HYDRANTS OF DIFFERENT SIZE.

| DIVISION | 2¼-inch Single | 2¼-inch Double | 4-inch Double | TOTAL |
|---|---|---|---|---|
| North | 5 | 17 | 2 | 24 |
| South | 2 | 76 | 29 | 107 |
| West | 9 | 202 | 14 | 225 |
| Hyde Park | 1 | 202 | ........ | 203 |
| Lake View | 1 | 191 | ........ | 192 |
| Lake | 2 | 242 | 20 | 264 |
| Jefferson | 1 | 223 | ........ | 224 |
| Calumet | ........ | 57 | ........ | 57 |
| Norwood Park | ........ | 1 | ........ | 1 |
| Rogers Park | ........ | 12 | ........ | 12 |
| Totals | 21 | 1223 | 65 | 1309 |

NOTE—4 Fire Cisterns built in 1909.

## TOTAL NUMBER OF FIRE HYDRANTS AT CLOSE OF 1909.

| DIVISION | 2¼-inch Single | 2¼-inch Double | 3¼-inch Double | 4-inch Double | 2¼-in. Double with one 4-in. Single | TOTAL |
|---|---|---|---|---|---|---|
| North | 328 | 674 | ........ | 164 | ........ | 1166 |
| South | 470 | 1409 | ........ | 209 | ........ | 2238 |
| West | 1251 | 5493 | 21 | 291 | ........ | 7056 |
| Hyde Park | 317 | 2585 | 22 | 29 | 590 | 3548 |
| Lake View | 108 | 1847 | ........ | 18 | ........ | 1973 |
| Lake | 189 | 1755 | ........ | 60 | 1508 | 3512 |
| Jefferson | 276 | 2211 | ........ | 5 | ........ | 2492 |
| Calumet | 175 | 786 | ........ | ........ | 50 | 1011 |
| Norwood Park | 5 | 64 | ........ | ........ | ........ | 69 |
| Rogers Park | 3 | 276 | ........ | ........ | ........ | 279 |
| Totals | 3122 | 17190 | 43 | 836 | 2148 | 23339 |

NOTE—From this Table have been deducted 666 hydrants of various sizes taken out in 1909.
Total number of Fire Cisterns in use at close of 1909—113.

## COMPLAINTS RECEIVED BY THE WATER PIPE EXTENSION DURING 1909.

| | DISTRICTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th | Totals |
| Leaks—Mains | 479 | 206 | 295 | 275 | 133 | 104 | 193 | 121 | 1,806 |
| Leaks—Service pipes | 377 | 162 | 355 | 237 | 78 | 46 | 121 | 84 | 1,460 |
| Leaks—Fire hydrants | 168 | 98 | 136 | 142 | 68 | 25 | 142 | 45 | 824 |
| Fire hydrants out of order | 313 | 80 | 403 | 288 | 137 | 24 | 193 | 85 | 1,523 |
| Taps shut off—Abandoned | 102 | 8 | 40 | 3 | ...... | ...... | ...... | 4 | 157 |
| Taps shut off—Vacant property | 10 | 8 | 12 | 40 | 4 | 23 | 6 | 5 | 108 |
| Taps shut off—Improved property | 20 | 40 | 86 | 50 | 34 | 22 | 8 | 44 | 304 |
| Shortage of water | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1,248 |
| Valve basin covers put on | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 414 |
| Miscellaneous | 123 | 28 | 64 | 65 | 8 | 10 | 14 | 14 | 326 |
| Totals | 1,592 | 630 | 1,391 | 1,100 | 462 | 254 | 677 | 402 | 8,170 |

## CORPORATION FERRULES INSTALLED AND LARGE CONNECTIONS MADE DURING YEAR 1909.

| | ¾ in. | 1 in. | 1¼ in. | 1½ in. | 2 in. | 3 in. | 4 in. | 6 in. | 8 in. | 12 in. | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Scattering** | 3,991 | 73 | 73 | 147 | 183 | 50 | 62 | 15 | 9 | 1 | 4,604 |
| **Street Improvement by Special Assessment** | 3,254 | ...... | .... | ...... | ...... | .... | .... | .... | .... | .... | 3,254 |
| **Street Improvement by Private Contract** | 1,870 | ...... | .... | ...... | ...... | .... | .... | .... | .... | .... | 1,870 |
| **Retapping*** | 4,424 | 50 | 12 | 29 | 38 | .... | .... | .... | .... | .... | 4,553 |
| **Pitometer Taps** | ........ | 59 | .... | ...... | ...... | .... | .... | .... | .... | .... | 59 |
| **Taps for Tests Air Cocks and Miscellaneous** | 20 | 9 | .... | ...... | 4 | .... | .... | .... | .... | .... | 33 |
| **Totals** | 13,559 | 191 | 85 | 176 | 225 | 50 | 62 | 15 | 9 | 1 | 14,373 |

***Retapping work caused by changing of mains incident to street improvement, track elevation and lowering mains.**

## WATER SERVICE PIPES INSTALLED DURING YEAR 1909.

| SIZE OF PIPE | Number of Service Pipes Installed at Cost of City for Immediate Use* | Number of Service Pipes Installed at Cost of Owner for Immediate Use | Number of Service Pipes Installed by Private Contract for Future Use | Number of Service Pipes Installed by Special Assessment for Future Use | Total Number of Service Pipes Installed During Year 1909 |
|---|---|---|---|---|---|
| **1-inch** | 8 | 3,983 | 1,870 | 3,254 | 9,115 |
| **1¼-inch** | ............ | 73 | ............ | ............ | 73 |
| **1½-inch** | 1 | 146 | ............ | ............ | 147 |
| **2-inch** | 5 | 178 | ............ | ............ | 183 |
| **3-inch** | 1 | 50 | ............ | ............ | 51 |
| **4-inch** | 10 | 62 | ............ | ............ | 72 |
| **6-inch** | ............ | 15 | ............ | ............ | 15 |
| **8-inch** | ............ | 9 | ............ | ............ | 9 |
| **12-inch** | ............ | 1 | ............ | ............ | 1 |
| Totals | 25 | 4,517 | 1,870 | 3,254 | 9,666 |

***Installed by Council Order for religious and charitable institutions and public fountains. One ½-inch service pipe installed for connection to pressure recording gauge.**

## SERVICE PIPES INSTALLED IN CITY OF CHICAGO

| | |
|---|---|
| Number of service pipes installed in city prior to January 1st, 1909.. | 372,835 |
| Number of service pipes installed during year 1909................ | 9,666 |
| Total number of service pipes installed to December 31st, 1909..... | 382,501 |

## WORK DONE BY LOCATING GANG DURING YEAR 1909.

| | |
|---|---|
| Number of service pipes located incident to street improvement...... | 3,758 |
| Number of vacant lots examined .................................... | 2,535 |
| Number of streets examined ........................................ | 106 |
| Number of special locations made.................................... | 138 |
| Number of iron service pipes located................................ | 5 |

## S TOP VALVES PUT IN DURING THE YEAR 1909, INCLUDING THOSE USED TO REPLACE VALVES OF DIFFERENT SIZE.

| DIVISION | SIZE OF VALVES | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4-inch | 6-inch | 8-inch | 12-inch | 14-inch | 16-inch | 20-inch | 24-inch | 30-inch | 36-inch | 48-inch | |
| North | | 12 | 5 | 1 | | | | 2 | | | | 20 |
| South | 4 | 26 | 31 | 20 | | | | | | 1 | | 82 |
| West | 4 | 60 | 42 | 7 | | 1 | 1 | | | | | 115 |
| Hyde Park | | 42 | 29 | 2 | | | | | | | | 73 |
| Lake View | | 42 | 33 | 9 | | 1 | | | | 2 | 1 | 88 |
| Lake | | 31 | 47 | 8 | 3 | | | 1 | | | | 90 |
| Jefferson | | 26 | 71 | 7 | | | | | | | | 104 |
| Calumet | | 10 | 13 | 2 | | | | | | | | 25 |
| Norwood Park | | | | | | | | | | | | |
| Rogers Park | | 7 | | | | | | | | | | 7 |
| Totals | 8 | 256 | 271 | 56 | 3 | 2 | 1 | 3 | | 3 | 1 | 604 |

## TOTAL NUMBER AND SIZE OF VALVES IN USE AT CLOSE OF 1909.

| DIVISION | SIZE OF VALVES | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4-inch | 6-inch | 8-inch | 10-inch | 12-inch | 14-inch | 16-inch | 18 inch | 20-inch | 24 inch | 30-inch | 36 inch | 42 inch | 48-inch | |
| North | 112 | 601 | 391 | | 69 | | 17 | | | 24 | | 10 | | | 1,224 |
| South | 139 | 1,006 | 952 | 1 | 154 | | 31 | | | 40 | 2 | 25 | | 1 | 2,351 |
| West | 514 | 3,310 | 1,819 | 5 | 412 | | 89 | | 1 | 44 | 5 | 39 | 1 | | 6,239 |
| Hyde Park | 61 | 1,519 | 510 | 20 | 133 | 4 | 76 | | 2 | 23 | 2 | 23 | | | 2,406 |
| Lake View | 93 | 1,146 | 422 | | 106 | 3 | 21 | | 4 | 18 | 5 | 10 | | 1 | 1,829 |
| Lake | 98 | 1,593 | 627 | 2 | 142 | 19 | 46 | 2 | 8 | 31 | 7 | 3 | | | 2,578 |
| Jefferson | 5 | 995 | 647 | | 132 | | 12 | | | 33 | 5 | 29 | 1 | | 1,859 |
| Calumet | 6 | 363 | 189 | | 3 | | 9 | | | 9 | | | | | 579 |
| Norwood Park | 14 | 21 | 7 | | | | | | | | | | | | 42 |
| Rogers Park | 12 | 103 | 15 | 10 | | | | | | | | | | | 140 |
| Totals | 1,087 | 10,687 | 5,579 | 38 | 1,151 | 26 | 301 | 2 | 15 | 222 | 26 | 139 | 2 | 2 | 19,277 |

NOTE.—From this Table have been deducted 109 valves of various sizes which were removed in 1909.

## WATER PIPE LOWERED DURING THE YEAR 1909.

| STREET | FROM | TO | Amount In Feet | Diameter In Inches |
|---|---|---|---|---|
| Ashland av. | 15th st. | 15th place | 260 | 8 |
| Armitage av. | Springfield av | Eastward | 75 | 30 |
| Avenue "G" | 106th st. | 108th st. | 300 | 6 |
| Buffalo av. | 83rd st. | 86th st. | 380 | 6 |
| Cullom av. | 44th av. | Westward | 180 | 6 |
| 45th st. | Shields av. | Eastward | 160 | 24 |
| 44th av. | Avondale av. | Northward | 110 | 6 |
| George st. | Sheffield av. | Seminary av. | 550 | 6 |
| Grand av. | Crossing | Homan av. | 170 | 16 |
| Humboldt av. | Hancock av. | 200 ft. W. of Central Park av. | 1,130 | 6 |
| Humboldt av. | Kimball av. | 150 ft. W. of Ballou av. | | |
| Irving Park blvd. | Perry st. | Ashland av. | 340 | 8 |
| Kimbark av. | 75th st. | South Chicago av. | 375 | 6 |
| Marquette av. | 79th st. | Southward | 550 | 6 |
| 118th place | Michigan av. | Eastward | 180 | 6 |
| 119th st. | Parnell av. | P., C., C. & St. L. R. R. | 700 | 8 |
| Osgood st. | Grace st. | Byron st. | 450 | 6 |
| Princeton av. | 45th st. | Northward | 218 | 6 |
| Saginaw av. | Railroad av. | 78th st. | 432 | 6 |
| Sheffield av. | Fletcher st. | George st. | 1,587 | 6 |
| Springfield av. | Crossing | Armitage av. | 40 | 30 |
| Winston av. | 375 ft. S. of 95th st. | Southward | 628 | 6 |
| | | Total | 8,815 | |

NOTE—In connection with the lowering of the above mains the service pipes were lowered wherever necessary from main to curb.

## WATER SERVICE PIPES LAID BY CONTRACT DURING 1909.

| STREET | FROM | TO | No. Pipes | Cost |
|---|---|---|---|---|
| Addison st. | Ravenswood Park | Robey st. | 30 | $ 341.55 |
| Avenue "J" | 106th st. | 108th st. | 35 | 348.88 |
| Avers av. | 26th st. | 31st st. | 109 | 1,117.40 |
| Avers av. | Milwaukee av. | North av. | 10 | 148.30 |
| Alley west of Grand blvd. | 39th st. | 40th st. | 7 | 55.06 |
| Avenue "H" | 106th st. | 107th st. | 17 | 161.84 |
| Avenue "O" | 106th st. | 108th st. | 51 | 548.40 |
| Berteau av. | Ravenswood Park | Leavitt st. | 12 | 172.20 |
| Belle Plaine av. | Hermitage av. | Ravenswood Park | 10 | 124.31 |
| Bernard av. | Irving Park av. | Montrose blvd. | 56 | 558.68 |
| Butler st. | 115th st. | 119th st. | 40 | 446.79 |
| Charles st. | 95th st. | 99th st. | 85 | 896.68 |
| Coles av. | 75th st. | 79th st. | 32 | 481.60 |
| Cullom av. | Ashland av. | Clark st. | 13 | 217.58 |
| Cornelia av. | Southport av. | Racine av. | 37 | 368.00 |
| Campbell av. | Irving Park blvd. | Montrose blvd. | 32 | 304.80 |
| Clark st. | Devon av. | Howard av. | 51 | 687.70 |
| Claremont av. | 35th st. | Bross av. | 62 | 801.15 |
| Drexel av. | 65th st. | 67th st. | 10 | 115.64 |
| Dakin st. | Western av. | Campbell av. | 28 | 362.12 |
| Diversey av. | Western av. | Milwaukee av. | 14 | 241.64 |
| Drexel av. | 75th st. | 79th st. | 77 | 922.84 |
| 81st st. | Vincennes road | C. & W. I. R. R. | 10 | 123.84 |
| Ellis av. | 75th st. | 79th st. | 36 | 406.35 |
| Exchange av. | 79th st. | 83rd st. | 118 | 1,611.75 |
| Ewing av. | 106th st. | 107th st. | 26 | 340.00 |
| Elston av. | 40th av. | Irving Park blvd. | 16 | 283.25 |
| Eggleston av. | 115th st. | 119th st. | 33 | 401.87 |
| 82nd st. | Halsted st. | C., R. I. & P. R. R. | 11 | 122.50 |
| 40th ct. | 31st st. | 32nd st. | 12 | 121.26 |
| 41st av. | Irving Park blvd. | C. & N. W. R. R. | 8 | 82.32 |
| 41st av. | 31st st. | 32nd st. | 10 | 105.93 |
| 51st ct. | Park av. | Washington blvd. | 30 | 354.04 |
| 45th av. | Montrose av. | Lawrence av. | 53 | 685.56 |
| 47th av. | Avondale av. | Wilson av. | 16 | 190.28 |
| 44th av. | Montrose av. | C. & N. W. R. R. | 12 | 207.83 |
| 46th av. | Montrose av. | Wilson av. | 17 | 192.95 |
| 46th ct. | Montrose av. | Leland av. | 27 | 364.21 |
| 51st av. | Moffat st. | Bloomingdale road | 12 | 160.19 |

| | | | | |
|---|---|---|---|---|
| 44th av. | Grace av. | Milwaukee av. | 13 | 155.50 |
| Francisco st. | 36th st. | 36th st. | 11 | 104.75 |
| Green Bay av. | 89th st. | Harbor av. | 14 | 208.32 |
| Green Bay av. | 106th st. | 108th st. | 26 | 203.51 |
| Greenwood av. | 75th st. | 79th st. | 24 | 435.76 |
| Humboldt av. | Hamlin av. | Kimball av. | 13 | 223.38 |
| Hermitage av. | Granville av. | Ridge av. | 9 | 137.46 |
| Humboldt st. | Grand av. | Cornelia st. | 38 | 508.72 |
| Indiana av. | 47th st. | 51st st. | 16 | 340.00 |
| Irving av. | Irving Park blvd. | Berteau av. | 8 | 94.12 |
| Jackson av. | 84th st. | 86th st. | 81 | 921.86 |
| Jackson av. | 65th st. | 67th st. | 11 | 148.92 |
| Kimball av. | Irving Park blvd. | Montrose av. | 38 | 327.04 |
| Kerfoot av. | 83rd st. | Vincennes av. | 28 | 278.16 |
| Lawndale av. | George st. | Fullerton av. | 40 | 423.60 |
| Linden pl. | Humboldt av. | Sacramento av. | 30 | 624.96 |
| Lawndale av. | McLean av. | Fullerton av. | 15 | 239.98 |
| Lakeside terrace | Rogers av. | Birchwood av. | 28 | 304.20 |
| Lakewood av. | Morse av. | Pratt av. | 9 | 104.81 |
| Lowe av. | Vincennes av. | 87th st. | 14 | 150.04 |
| Lawrence av. | Western av. | Lincoln st. | 72 | 1,039.70 |
| Mackinaw av. | 106th st. | 108th st. | 33 | 380.70 |
| Marquette av. | Railroad av. | 79th st. | 24 | 416.52 |
| Marquette av. | 79th st. | 81st st. | 60 | 1,001.25 |
| Magnolia av. | Peterson av. | Thorndale av. | 14 | 141.75 |
| Morgan st. | 77th st. | 79th st. | 48 | 459.25 |
| Milwaukee av. | W. Irving Park blvd. | Berteau av. | 33 | 565.80 |
| 99th pl. | State st. | Michigan av. | 29 | 289.59 |
| 100th st. | State st. | Michigan av. | 21 | 245.78 |
| 107th st. | Wentworth av. | C. & W. I. R. R. | 34 | 522.58 |
| 102nd pl. | State st. | Michigan av. | 20 | 218.55 |
| 108th pl. | State st. | Wentworth av. | 34 | 326.18 |
| 117th st. | Stewart av. | Wallace st. | 51 | 521.73 |
| 118th st. | Stewart av. | Wallace st. | 29 | 269.24 |
| 101st st. | Prospect av. | Wood st. | 26 | 296.27 |
| Paulina st. | 65th st. | 67th st. | 37 | 273.86 |
| Paulina st. | Granville av. | Peterson av. | 22 | 194.22 |
| Parnell av. | W. 115th st. | 119th st. | 41 | 479.88 |
| Rhodes av. | 60th st. | 61st st. | 10 | 110.25 |
| Robey st. | Garfield blvd. | W. 54th st. | 27 | 356.25 |
| 76th st. | L. S. & M. S. R. R. | Stony Island av. | 54 | 499.59 |
| Sherman av. | 79th st. | Railroad av. | 27 | 379.20 |
| Southport av. | Devon av. | Pratt av. | 37 | 672.66 |
| 76th st. | Colfax av. | Bond av. | 8 | 96.38 |

## WATER SERVICE PIPES LAID BY CONTRACT DURING 1909.—Continued.

| STREET | FROM | TO | No. Pipes | Cost |
|---|---|---|---|---|
| Springfield av. | 16th st. | Ogden av. | 30 | 431.64 |
| Seeley av. | 103rd st. | 107th st. | 38 | 470.53 |
| Sunnyside av. | Western av. | Lincoln st. | 7 | 84.00 |
| Saginaw av. | Railroad av. | 79th st. | 24 | 376.32 |
| Scott pl. | Homan av. | Spaulding av. | 6 | 75.73 |
| St. Louis av. | 12th st. | Fillmore av. | 11 | 100.22 |
| Spaulding av. | Chicago av. | Franklin st. | 60 | 879.04 |
| 63rd st. | Ashland av. | Leavitt st. | 167 | 3,242.15 |
| Sacramento av. | 36th st. | 36th pl. | 15 | 155.52 |
| State st. | 103rd st. | 106th st. | 56 | 688.47 |
| Troy st. | Waveland av. | Addison st. | 38 | 424.17 |
| Throop st. | 103rd st. | 107th st. | 40 | 598.32 |
| Vincennes av. | 60th st. | 61st st. | 23 | 292.32 |
| Van Buren st. | 48th av. | 50th av. | 49 | 570.53 |
| Vincennes av. | 79th st. | 81st st. | 19 | 204.00 |
| Whipple st. | Montrose av. | Irving Pk. blvd. | 64 | 651.70 |
| Wilson av. | Western av. | Leavitt st. | 11 | 100.80 |
| Winnemac av. | Evanston av. | Clark st. | 30 | 326.56 |
| | | | 3,213 | $40,743.62 |
| Average cost per pipe | | | | $12.68 |

## PIPE LAID BY SPECIAL ASSESSMENT.

| STREET | FROM | TO | CONTRACTOR | Diam. Inches | No. of Feet | Price Per Foot | Add. for Valve Basins | Total Cost |
|---|---|---|---|---|---|---|---|---|
| Alleys Between | Cottage Grove av.<br>45th st. | Drexel av.<br>46th st. | John McCarthy | 6 | 628 | $0.85 | $ 27.00 | $ 560.80 |
| Aberdeen st. | 77th st. | 76th st. | Malachy Murphy. | 8 | 689 | 1.31 | ....... | 902.59 |
| Aberdeen st. | 99th st. | 103rd st. | Jas. J. Lynch | 8 | 2,802 | 1.20 | 90.00 | 3,452.40 |
| Ada st. | 87th st. | 88th st. | Malachy Murphy | 6 | 675 | 1.08 | 30.00 | 759.00 |
| Addison st. | Lowell av. | N. 46th av. | Simon Ryan | 8 | 1,853 | 1.23 | 30.00 | 2,309.19 |
| Belle Plaine av. | Hermitage av. | E. Ravenswood av. | Simon Ryan | 6 | 402 | .98 | ....... | 393.96 |
| Bishop st. | 87th st. | 91st st. | Malachy Murphy | 6 | 2,649 | 1.05 | 60.00 | 2,841.45 |
| California av. | 51st st. | 53rd st. | Malachy Murphy | 6 | 1,293 | 1.08 | 30.00 | 1,426.44 |
| Center av. | 76th st. | 77th st. | Malachy Murphy. | 8 | 699 | 1.30 | ....... | 908.70 |
| Center av. | 84th st. | 86th st. | Jas. J. Lynch | 8<br>12 | 76<br>1,342 | 1.76 | 30.00 | 2,525.68 |
| Chicago av. | 53rd av. | Poplar av. | Jas. J. Lynch | 8 | 1,264 | 1.34 | 60.00 | 1,753.76 |
| Drake av. | Montrose av. | Wilson av. | Simon Ryan | 6 | 1,310 | 1.15 | 30.00 | 1,536.50 |
| Eddy st. | N. 48th av. | N. 52nd av. | Malachy Murphy | 8 | 2,647 | 1.29 | 30.00 | 3,444.63 |
| Eggleston av. | 117th st. | 118th st. | Malachy Murphy | 6 | 665 | .88 | 30.00 | 615.20 |
| Eggleston av. | 115th st. | 116th st. | Malachy Murphy | 6 | 665 | .88 | 30.00 | 615.20 |
| 40th av. | Eddy st. | Roscoe st. | Simon Ryan | 6<br>8 | 82<br>1,111 | 1.14 | 30.00 | 1,390.02 |
| 43rd av. | Milwaukee av. | Roscoe st. | Malachy Murphy | 8 | 1,118 | 1.21 | 30.00 | 1,382.78 |
| 48th av. | Eddy st. | School st. | Simon Ryan | 8 | 1,666 | 1.24 | 30.00 | 2,095.84 |
| Glen Lake av. | Clark st. | Paulina st. | Malachy Murphy | 6 | 430 | .90 | 30.00 | 417.00 |
| Greenwood ter. | 46th av. | 48th av. | Simon Ryan | 12<br>6 | 50<br>1,215 | 1.22 | 30.00 | 1,585.95 |
| Greenwood ter. | 49th av. | 50th av. | Simon Ryan | 6 | 666 | .96 | ....... | 639.36 |
| Higgins av. | 56th av. | Indian Boundary Line | Simon Ryan | 6 | 895 | .98 | 30.00 | 907.10 |
| Indiana av. | 118th st. | 119th st. | Malachy Murphy | 6 | 677 | .99 | 60.00 | 730.23 |
| Lawndale av. | School st. | Eddy st. | Simon Ryan | 6 | 1,772 | .96 | 30.00 | 1,731.12 |
| Linden pl. | Sacramento av. | 420 feet East of Humboldt blvd. | Simon Ryan | 8<br>6 | 41<br>985 | .95 | ....... | 974.70 |
| Magnolia av. | Peterson av. | Thorndale av. | Malachy Murphy | 8 | 235 | 1.02 | ....... | 239.70 |
| May st. | 76th st. | 77th st. | Malachy Murphy | 8 | 675 | 1.30 | 30.00 | 907.50 |
| May st. | 87th st. | 89th st. | Malachy Murphy | 8 | 1,316 | 1.24 | 30.00 | 1,661.84 |
| May st. | 100th st. | 103rd st. | Jas. J. Lynch | 6 | 2,098 | 1.25 | 60.00 | 2,682.50 |
| Morgan st. | 76th st. | 77th st. | Malachy Murphy | 8 | 634 | 1.37 | 30.00 | 898.58 |
| 108th st. | State st. | Wentworth av. | Jas. J. Lynch | 8 | 1,368 | 1.29 | 60.00 | 1,824.72 |
| 115th st. | Halsted st. | Lowe av. | Jas. J. Lynch | 8<br>12 | 72<br>969 | 1.79 | 60.00 | 1,923.39 |

## PIPE LAID BY SPECIAL ASSESSMENT.—(Continued)

| STREET | FROM | TO | CONTRACTOR | Diam. Inches | No. of Feet | Price Per Foot | Add. for Valve Basins | Total Cost |
|---|---|---|---|---|---|---|---|---|
| Parnell av. | 115th st. | 117th st. | Malachy Murphy.. | 6 | 1,340 | .88 | 60.00 | 1,239.20 |
| Peterson av. | Clark st. | E. Ravenswood Park.. | Simon Ryan | 6<br>8 | 30<br>1,260 | 1.29 | 30.00 | 1,694.10 |
| Sawyer av. | Montrose av. | Berteau av. | Simon Ryan | 6 | 1,310 | 1.00 | 30.00 | 1,340.00 |
| Seeley av. | Alley North of 56th st. | 57th st. | Jas. J. Lynch | 6 | 1,000 | .99 | 30.00 | 1,020.00 |
| 73rd place | Bishop st. | Ada st. | Malachy Murphy.. | 8 | 896 | 1.20 | 30.00 | 1,105.20 |
| 74th st. | Bishop st. | Ada st. | Malachy Murphy.. | 6 | 884 | 1.05 | 30.00 | 958.20 |
| South Park av. | 220 feet North of 72nd st. | 73rd st. | Jas. J. Lynch | 6 | 885 | .99 | ....... | 876.15 |
| Spaulding av. | Berteau av. | Montrose av. | Malachy Murphy.. | 6 | 1,458 | .85 | 30.00 | 1,299.30 |
| Springfield av. | Division st. | 150 feet North of Augusta st. | Simon Ryan | 8 | 1,164 | 1.27 | 30.00 | 1,508.28 |
| State st. | 103rd st. | 105th st. | Daniel Hardin | 6<br>8 | 72<br>1,508 | 1.29 | 84.00 | 2,122.20 |
| Troy st. | Waveland av. | Addison st. | Malachy Murphy. | 6<br>8 | 693<br>70 | .95 | 30.00 | 754.85 |
| Union av. | 124th st. | 125th st. | Jas. J. Lynch | 8 | 665 | 1.22 | ....... | 811.30 |
| Van Buren st. | 559 feet West of 53rd av. | Central av. | Simon Ryan | 6 | 1,366 | .98 | ....... | 1,338.68 |
| Wellington st. | Ashland av. | Paulina st. | Malachy Murphy.. | 8 | 640 | 1.18 | 30.00 | 785.20 |
| Whipple st. | Cornelia st. | Elston av. | Simon Ryan | 6 | 552 | .98 | 30.00 | 570.96 |
| Winchester av. | 94th st. | 95th st. | Jas. J. Lynch | 6 | 706 | .98 | 30.00 | 721.88 |

## PIPE LAID BY SPECIAL ASSESSMENT—SYSTEMS.

| STREET | FROM | TO | CONTRACTOR | Diam. Inches | No. of Feet | Price Per Ft | Add for Valve Basins | Total Cost |
|---|---|---|---|---|---|---|---|---|
| Central av. | Crystal st. | Kammerling av. | Simon Ryan | 12 | 693 | 1.50 | 30.00 | $ 2,410.50 |
| Kammerling av. | Central av. | Pine av. | | 8 | 894 | | | |
| Center av. | 150 ft. S. of 74th pl. | 76th st. | Myers & Dixon | 8 | 762 | 1.27 | 90.00 | 2,194.39 |
| May st. | 75th st. | 76th st. | | 6 | 559 | | | |
| 75th st. | Center av. | May st. | | 8 | 336 | | | |
| 83rd st. | Halsted st. | Morgan st. | Malachy Murphy | 8 | 1,322 | 1.08 | 180.00 | 4,623.12 |
| Green st. | 83rd st. | 84th st. | | 6 | 698 | | | |
| Peoria st. | 83rd st. | 84th st. | | 6 | 698 | | | |
| Sangamon st. | 83rd st. | 84th st. | | 6 | 698 | | | |
| Morgan st. | 83rd st. | 84th st. | | 8 | 698 | | | |
| 46th av. | Addison st. | Roscoe st. | Simon Ryan | 8 | 1,292 | 1.19 | 240.00 | 6,517.25 |
| 45th court | Addison st. | Roscoe st. | | 8 | 1,292 | | | |
| 45th av. | Addison st. | Roscoe st. | | 8 | 1,292 | | | |
| Roscoe st. | C. M. & St. P. R. R. | 46th av. | | 8 | 1,399 | | | |
| 48th av. | Greenwood ter. | Nevada st. | Simon Ryan | 12 | 285 | 1.44 | 30.00 | 1,765.20 |
| Nevada st. | 48th av. | 380 ft. E. of 50th av. | | 8 | 920 | | | |
| 54th av. | 257 ft. S. of Hirsch st. | Hirsch st. | Simon Ryan | 6 | 351 | 1.22 | 180.00 | 4,609.82 |
| Hirsch st. | 52nd av. | 54th av. | | 8 | 1,420 | | | |
| 53rd court | Hirsch st. | Le Moyne st. | | 6 | 620 | | | |
| 53rd av. | Hirsch st. | Le Moyne st. | | 6 | 620 | | | |
| 52nd court | Hirsch st. | Le Moyne st. | | 6 | 620 | | | |
| 58th place | Central Park av. | St. Louis av. | Malachy Murphy | 6 | 610 | 1.19 | 30.00 | 1,945.90 |
| 59th st. | Central Park av. | St. Louis av. | | 8 | 665 | | | |
| St. Louis av. | 58th place | 59th st. | | 6 | 335 | | | |
| Hamilton av. | Alley S. of Garfield bd. | 58th st. | Daniel Hardin | 8 | 1,711 | 1.24 | 280.00 | 8,399.52 |
| W. 58th st. | Hamilton av. | Hoyne av. | | 6 | 336 | | | |
| Hoyne av. | 58th st. | 59th st. | | 6 | 717 | | | |
| Seeley av. | 57th st. | 59th st. | | 6 | 1,392 | | | |
| Robey st. | 57th st. | 59th st. | | 8 | 1,381 | | | |
| W. 57th st. | Hamilton av. | Robey st. | | 12 | 1,011 | | | |
| Indiana av. | 79th st. | 81st st. | Malachy Murphy | 8 | 1,331 | 1.30 | 90.00 | 3,224.30 |
| 81st st. | Indiana av. | Prairie av. | | 8 | 440 | | | |
| Prairie av. | 80th st. | 81st st. | | 8 | 640 | | | |
| 69th av. | 200 ft. N. of Belden av. | Humboldt av. | Malachy Murphy | 6 | 695 | .92 | 30.00 | 1,705.32 |
| Humboldt av. | 69th av. | 70th av. | | 6 | 485 | | | |
| 70th av. | Humboldt av. | Dickens av. | | 6 | 641 | | | |
| 79th st. | Center av. | Ada st. | Malachy Murphy | 12 | 890 | 1.55 | ...... | 3,382.10 |
| Ada st. | 77th st. | 79th st. | | 8 | 1,292 | | | |
| | | | Totals | | 86,274 | | | $104,960.75 |

Note.—2,436 feet of 6-inch pipe used for hydrant branches.

## PIPE LAID IN SOUTH DIVISION

| STREET | FROM | TO | Amount in Feet | Dia. in Inch | HOW LAID |
|---|---|---|---|---|---|
| Alexander street | Wentworth avenue | Princeton avenue | 728 | 8 | Account paving |
| Arch street | Crossing | Lyman street | 84 | 8 | Account paving |
| Bonfield street | Hillock avenue | Archer avenue | 537 | 6 | Account paving |
| Bonfield street | Archer avenue | Lyman street | 816 | 6 | Account paving |
| Broad street | Archer avenue | 31st street | 678 | 8 | Account paving |
| Butler street | 300 ft. N. of 35th street | Northward | 144 | 8 | Revenue |
| Butler street | 29th street | 31st street | 1,248<br>11 | 8<br>6 | Revenue |
| Farrell street | Crossing | Lyman street | 84 | 8 | Account paving |
| Hillock avenue | Crossing | Throop street | 78 | 8 | Account paving |
| Hoey street | Crossing | Poplar avenue | 45 | 6 | Account paving |
| La Salle street | 22nd street | 25th street | 1,380<br>9<br>20 | 8<br>12<br>6 | Account paving |
| La Salle street | 26th street | 39th street | 5,886<br>6 | 8<br>6 | Account paving |
| Madison street | Market street | State street | 2,452<br>68<br>82 | 12<br>6<br>4 | Account paving |
| Randolph street | State street | Michigan avenue | 752<br>31<br>11 | 12<br>6<br>4 | Account paving |
| Throop street | 25th street | Archer avenue | 1,399 | 8 | Account paving |
| Throop street | 219 ft. N. of 25th street | Northward | 140<br>15 | 36<br>8 | Feeder Mains |
| 25th street | Crossing | Throop street | 46 | 6 | Account paving |
| 27th street | Wallace street | Canal street | 774 | 6 | Account paving |
| 28th place | Wallace street | 275 feet E. of Canal street | 1,185 | 6 | Account paving |
| Total | | | 18,709 | .... | |
| Add Branch Pipe for Hydrants | | | 12 | 4 | |
| " " " " " | | | 906 | 6 | |
| " " " " " | | | 207 | 8 | |
| **Total feet of pipe laid in South Division** | | | 19,834 | .... | |

## PIPE LAID IN WEST DIVISION.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Alley N. of Jackson blvd. | Loomis st. | Eastward | 175 | 4 | Account paving |
| Augusta st. | Crossing | 50th av. | 44 | 6 | Circ. mains |
| Austin av. | 90 feet E. of Desplaines st. | Jefferson st. | 236 | 6 | Track elevation |
| Blanche st. | Noble st. | Eastward | 314 | 6 | Account paving |
| Central av. | Crystal st. | Kamerling av. | 693 | 12 | Special assessment |
| Central Park av. | Ogden av. | 150 ft. S. of 22nd st. | | | |
| Central Park av. | 250 ft. N. of 23rd st. | 25th st. | 2,766 | 6 | Account paving |
| Cherry st. | Weed st. | Northward | 345 | 8 | Fire protection |
| Chicago av. | Crossing | 53rd av. | 48 | 12 | Special assessment |
| Chicago av. | 53rd av. | Poplar av. | 1,131 | 8 | Special assessment |
| Congress st. | 47th av. | 48th av. | 704 | 6 | Deposit |
| Cornelia st. | 50 feet E. of Western av. | Oakley av. | 511 | 6 | Deposit |
| Cornell st. | May st. | Carpenter st. | 478 | 6 | Deposit |
| Cortez st. | 96 ft. E. of Pine av. | Eastward | 288 | 6 | Revenue |
| Cortez st. | 50 ft. E. of Western av. | Oakley av. | 532 | 6 | Deposit |
| Cortez st. | Oakley av. | Leavitt st. | 588 | 6 | Deposit |
| Cortez st. | Crossing | 50th av. | 46 | 8 | Circ. mains |
| Crystal st. | 475 ft. E. of Robey st. | Leavitt st. | 1,720 | 6 | Account paving |
| Elizabeth st. | Crossing | Kinzie st. | 32 | 6 | Account paving |
| 11th st. | Crossing | Sholto st. | 36 | 6 | Account paving |
| Erie st. | 50th av. | Westward | 470 | 6 | Revenue |
| 14th pl. | Center av. | Morgan st. | 1,499<br>6<br>12 | 8<br>6<br>4 | Account paving |
| 50th av. | Augusta st. | Cortez st. | 330 | 8 | Rev. and Circ. |
| 50th av. | Lake st. | Kinzie st. | 333 | 8 | Track elevation |
| 50th ct. | Augusta st. | Thomas st. | 662 | 6 | Deposit |
| 51st av. | Augusta st. | Thomas st. | 666 | 6 | Deposit |
| 51st ct. | 65 feet S. of West End av. | Northward | 411 | 6 | Revenue |
| 52nd av. | Crossing | Hirsch st. | 27 | 8 | Circ. mains |
| 52nd av. | Flournoy st. | 142 ft. S. of Lexington st. | 512 | 8 | Deposit |
| 52nd ct. | Hirsch st. | LeMoyne st. | 620 | 6 | Special assessment |
| 53rd av. | Hirsch st. | LeMoyne st. | 620 | 6 | Special assessment |
| 53rd ct. | Hirsch st. | LeMoyne st. | 620 | 6 | Special assessment |
| 54th av. | Hirsch st. | Southward | 351 | 6 | Special assessment |
| Grand av. | Crossing | Union st. | 51 | 6 | Track elevation |
| Haddon av. | Crossing | Kedzie av. | 30 | 6 | Account paving |
| Harding av. | LeMoyne st. | Northward | 182 | 6 | Rev. and Circ. |

## PIPE LAID IN WEST DIVISION—Continued.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Harding av. | 24th st. | 26th st. | 1,260 | 6 | Deposit |
| Harding av. | 21st st. | Northward | 183 | 6 | Revenue |
| Hirsch st. | 52nd av. | 54th av. | 1,420 | 8 | Special assessment |
| Homan av. | Crossing | Franklin blvd. | 28 | 8 | Account paving |
| Homer st. | Crossing | Albany av. | 30 | 6 | Account paving |
| Humboldt blvd. | Francisco av. | Eastward | 120 | 6 | Deposit |
| Kamerling av. | Central av. | 346 ft. E. of Pine av. | 894 | 8 | Special assessment |
| Kinzie st. | Clinton st. | Eastward | 218 | 6 | Deposit |
| Lessing st. | Chicago av. | Front st. | 347 | 8 | Account paving |
| Lewis st. | Division st. | Hirsch st. | 1,310 | 8 | Deposit |
| Lexington st. | 51st av. | 52nd av. | 394 | 6 | Deposit |
| Luce st. | Blackhawk st. | Northward | 324 | 6 | Account paving |
| Mather st. | Canal st. | Jefferson st. | 686 | 8 | Account paving |
| Moffatt st. | Crossing | Albany av. | 30 | 6 | Account paving |
| Monticello av. | 210 ft. N. of Kinzie st. | Southward | 190 | 8 | Deposit |
| Ohio st. | Crossing | Armour st. | 50 | 6 | Account paving |
| Powell pk. | Crossing | Western av. | 39 | 6 | Account paving |
| Ruble st. | Crossing | 21st st. | 25 | 8 | Account paving |
| Sacramento ct. | Fulton st. | Northward | 170 | 6 | Account paving |
| Sangamon st. | Intersection of | Front st. | 143 | 6 | Track elevation |
| Sangamon st. | Randolph st. | Lake st. | 448 | 8 | Account paving |
| Sangamon st. | 327 ft. N. of 16th st. | Northward | 189 | 8 | Track elevation |
| School st. | Desplaines st. | Westward | 630 | 6 | Account paving |
| 17th st. | Ashland av. | Loomis st. | 1,320<br>9 | 8<br>6 | Account paving |
| Sheldon st. | Carroll av. | Arbor pl. | 241 | 6 | Account paving |
| Sholto st. | Taylor st. | 11th st. | 403 | 6 | Account paving |
| Springfield av. | 150 ft. N. of Augusta st. | Division st. | 1,164 | 8 | Special assessment |
| Springfield av. | 19th st. | Southward | 435 | 6 | Revenue |
| String st. | Crossing | 21st st. | 25 | 8 | Account paving |
| Talman av. | Lake st. | Northward | 281 | 6 | Revenue |
| Throop st. | Crossing | 22nd st. | 72 | 8 | Circ. mains |
| 12th st. blvd. | Ogden av. | Ashland av. | 4,803<br>45 | 8<br>6 | Account paving |

| | | | | | |
|---|---|---|---|---|---|
| 21st st. | Jefferson st. | Union st. | 642 | 8 | Account paving |
| 21st pl. | Halsted st. | Union st. | 476 | 6 | Account paving |
| 28th st. | Crossing | Avers av. | 72 | 8 | Account paving |
| 31st st. | Spaulding av. | Westward | 82 | 8 | Deposit |
| Van Buren st. | 47th av. | 48th av. | 706 | 6 | Deposit |
| Van Buren st. | 629 ft. W. of 53rd av. | Central av. | 1,366 | 6 | Special assessment |
| Waller av. | Division st. | Hirsch st. | 1,348 | 8 | Deposit |
| Walnut st. | Homan av. | St. Louis av. | 634 | 8 | Deposit |
| Walnut st. | Albany av. | Kedzie av. | 650 | 8 | Account paving |
| Washington blvd. | Prairie av. | Eastward | 129 | 6 | Revenue |
| Wellington av. | Washtenaw av. | Westward | 174 | 6 | Circ. mains |
| Wellington av. | California av. | Eastward | 204 | 6 | Circ. mains |
| West End av. | 47th av. | 48th av. | 600 | 6 | Revenue |
| West End av. | 45th av. | Eastward | 123 | 6 | Revenue |
| Willow av. | Crossing | Chicago av. | 51<br>34 | 8<br>6 | Special assessment |
| Total | | | 43,309 | | |
| Add branch pipe for hydrants | | | 4 | 4 | |
| Add branch pipe for hydrants | | | 2,392 | 6 | |
| Add branch pipe for hydrants | | | 54 | 8 | |
| Total feet of pipe laid in West Division | | | 45,759 | | |

## PIPE LAID IN HYDE PARK.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Adams avenue | 68th street | Southward | 135 | 6 | Deposit |
| Alley E. of Cottage Grove | 46th street | Northward | 628 | 6 | Special assessment |
| Alley W. of Drexel boulevard | Crossing | 47th street | 24 | 6 | Account paving |
| Alley W. of Drexel boulevard | 40th street | 41st street | 418 | 6 | Revenue |
| Avenue L | Crossing | 106th street | 36 | 8 | Account paving |
| Avenue O | Crossing | 106th street | 36 | 8 | Account paving |
| Calumet avenue | Crossing | 71st street | 66 | 6 | Circ. mains |
| Coles avenue | 71st street | 130 ft. S. of 72nd street | 629 | 6 | Circ. mains |
| Commercial avenue | 134th street | Northward | 276 | 6 | Supply to Sewer P. Sta. |
| Drexel avenue | 79th street | Southward | 338 | 8 | Revenue |
| 81st street | Prairie avenue | Indiana avenue | 440 | 8 | Special assessment |
| 81st street | Manistee avenue | Exchange avenue | 1,270 | 8 | Account paving |
| 85th street | Green Bay avenue | Superior avenue | 972 | 8 | Account paving |
| 85th street | Muskegon avenue | Sherman avenue | 333 | 6 | Circ. mains |
| Erie avenue | 95th | Southward | 540 | 6 | Circ. mains |
| Evans avenue | 42nd street | 43rd street | 626 | 6 | Account paving |
| 48th street | Crossing | Madison avenue | 38 | 6 | Account paving |
| 49th street | Greenwood avenue | Kimbark avenue | 1,030 | 6 | Account paving |
| Green Bay avenue | Crossing | 106th street | 36 | 8 | Account paving |
| Houston avenue | Howard avenue | 135 ft. N. of 134th street | 660 | 6 | Deposit |
| Howard avenue | 138th street | Northward | 1,064 | 6 | Deposit |
| Hoxie avenue | 103rd street | Southward | 90 | 8 | Revenue |
| Indiana avenue | 79th street | 81st street | 1,331 | 8 | Special assessment |
| Indiana avenue | 118th street | 119th street | 677 | 6 | Special assessment |
| Jefferson avenue | 68th street | Southward | 300 | 6 | Revenue |
| Jeffrey avenue | Crossing | L. S. & M. S. R. R. | 110 | 8 | Track elevation |
| Luella avenue | 71st street | Southward | 306 | 6 | Revenue |
| Luella avenue | 260 ft. S. of 73rd street | Southward | 115 | 6 | Deposit |
| Mackinaw avenue | Crossing | 106th street | 36 | 8 | Account paving |
| Marquette avenue | 86th street | Southward | 382 | 6 | Revenue |
| Muskegon avenue | Railroad avenue | Southward | 36 | 6 | Account paving |
| Muskegon avenue | Baltimore avenue | 85th street | 1,104 | 6 | Rev. and Circ. |
| Muskegon avenue | 83rd street | Northward | 243 | 6 | Account paving |
| 91st place | Cottage Grove | Westward | 372 | 6 | Circ. mains |
| 93rd street | Vaughn avenue | Eastward | 170 | 6 | Revenue |
| 95th street | Indiana avenue | Wabash avenue | 856 | 8 | Circ. mains |
| 104th street | Muskegon avenue | Torrence avenue | 1,258 | 8 | Circ. mains |

| | | | | | |
|---|---|---|---|---|---|
| 105th street | Crossing | Avenue H | 72 | 12 | Account paving |
| 105th street | Crossing | Ewing avenue | 72 | 12 | Account paving |
| 105th street | Crossing | Avenue L | 72 | 12 | Account paving |
| 108th street | Crossing | State street | 29 | 8 | Circ. mains |
| 113th street | Green Bay avenue | Avenue N | 601 | 8 | Account paving |
| 134th street | Commercial avenue | Westward | 254 | 6 | Supply to Sewer P. Sta. |
| 136th street | C. & E. I. R. R. | Westward | 216 | 6 | Revenue |
| Palmer avenue | 72nd street | 73rd street | 660 | 8 | Deposit |
| Palmer avenue | 71st street | Southward | 418 | 8 | Rev. and Circ. |
| Paxton avenue | 73rd street | 74th street | 641 | 8 | Revenue |
| Palmer avenue | 72nd street | Northward | 219 | 8 | Deposit |
| Prairie avenue | 80th street | 81st street | 640 | 8 | Special assessment |
| Pullman avenue | 103rd street | 104th street | 748 | 12 | Deposit |
| Rhodes avenue | 61st street | 63rd street | 1,330 | 8 | Deposit |
| Saginaw avenue | 78th street | 79th street | 672 | 6 | Circ. mains |
| 68th street | Crossing | Jackson Park avenue | 98 | 6 | Account paving |
| 71st street | Oglesby avenue | Palmer avenue | 200 | 8 | Revenue |
| 72nd street | 53 ft. W. of Kimbark avenue. | Westward | 274 | 6 | Account paving |
| South Park avenue | 220 ft. N. of 72nd street | 73rd street | 885 | 6 | Special assessment |
| Vernon avenue | 61st street | 63rd street | 1,330 | 8 | Deposit |
| Vincennes avenue | 61st street | 63rd street | 1,320 | 8 | Deposit |
| Washington avenue | 73rd street | 73rd place | 334 | 6 | Revenue |
| Total | | | 28,076 | | |
| Add branch pipe for hydrants | | | 1,787* | 6 | |
| Total feet of pipe laid in Hyde Park | | | 29,863 | | |

## PIPE LAID IN TOWN OF LAKE.

| STREET. | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Aberdeen street | 76th street | 77th street | 689 | 8 | Special assessment |
| Ada street | 77th street | 79th street | 1,292 | 8 | Special assessment |
| Alley S. of 49th street | Crossing | Armour avenue | 48 | 8 | Account paving |
| Alley S. of 55th street | Robey street | Lincoln street | 660 | 6 | Deposit |
| Armour avenue | 51st street | 700 ft. S. of 53rd street | 2,045 | 6 | Account paving |
| Armour avenue | 49th street | 51st street | 1,262 | 8 | Account paving |
| Armour avenue | Crossing | 45th street | 70 | 6 | Account paving |
| California avenue | 71st street | 73rd street | 1,314 | 8 | Deposit |
| California avenue | 51st street | 53rd street | 1,293 | 6 | Special assessment |
| Center avenue | 76th street | 77th street | 699 | 8 | Special assessment |
| Center avenue | 75th street | Belt railway | 234 | 8 | Special assessment |
| Center avenue | 75th street | 76th street | 528 | 8 | Special assessment |
| Center avenue | 84th street | 86th street | 1,342 | 12 | Special assessment |
| Central Park avenue | Crossing | 59th street | 41 | 8 | Special assessment |
| Dearborn street | 43rd street | 47th street | 2,295 | 6 | Account paving |
| Dearborn street | 39th street | Root street | 1,597 | 8 | Account paving |
| Dearborn street | 51st street | 990 ft. S. of 47th street | 1,609 | 8 | Account paving |
| Dearborn street | Crossing | 45th street | 70 | 6 | Account paving |
| 83rd street | Halsted street | Morgan street | 1,322 | 8 | Special assessment |
| 85th street | Crossing | Center avenue | 76 | 8 | Special assessment |
| 41st street | Albany avenue | 1st Alley E. of Kedzie av. | 489 | 6 | Deposit |
| 43rd street | Crossing | Dearborn | 45 | 6 | Account paving |
| 43rd place | Crossing | Dearborn | 165 | 6 | Account paving |
| 43rd place | Crossing | State street | 40 | 8 | Account paving |
| 43rd place | Shields avenue | Stewart avenue | 235 | 6 | Revenue |
| 44th street | Kedzie avenue | Eastward | 170 | 6 | Circ. mains |
| 45th street | Wallace street | 239 ft. E. of Butler street | 905 | 6 | Account paving |
| 45th street | Union avenue | Wallace street | 600 | 6 | Account paving |
| 45th place | Crossing | State street | 36 | 8 | Account paving |
| 45th place | Crossing | Dearborn street | 72 | 6 | Account paving |
| 45th place | Packers avenue | Westward | 458 | 12 | Deposit |
| 49th street | Crossing | State street | 71 | 8 | Account paving |
| 50th street | Crossing | Dearborn street | 70 | 8 | Account paving |
| 55th street | Crossing | State street | 31 | 8 | Account paving |
| 55th street | Talman avenue | Rockwell street | 324 | 12 | Deposit |
| 57th street | Hamilton avenue | Robey street | 1,011 | 12 | Special assessment |
| 58th street | Hamilton avenue | Hoyne avenue | 336 | 6 | Special assessment |
| 58th place | St. Louis avenue | Westward | 610 | 6 | Special assessment |

| | | | | | |
|---|---|---|---|---|---|
| 59th street | Central Park avenue | St. Louis avenue | 624 | 8 | Special assessment |
| Green street | 83rd street | 84th street | 698 | 6 | Special assessment |
| Hamilton avenue | Alley S. of 55th street | 58th street | 1,711 | 8 | Special assessment |
| Honore street | 71st street | Northward | 182 | 8 | Circ. mains |
| Hoyne avenue | Crossing | 63rd street | 90 | 6 | Account paving |
| Hoyne avenue | 57th street | 58th street | 667 | 6 | Deposit |
| Hoyne avenue | 58th street | 59th street | 717 | 6 | Special assessment |
| Kedzie avenue | 46th street | 47th street | 668 | 8 | Acct. Sewer Const. |
| Kedzie avenue | 73rd street | Southward | 650 | 8 | Deposit |
| Kedzie avenue | Crossing | 44th street | 26 | 8 | Circ. mains |
| La Salle street | Garfield boulevard | 57th place | 1,703 | 8 | Account paving |
| Lincoln street | 71st street | Northward | 300 | 8 | Revenue |
| Loomis street | 177 feet N. of 46th street | Northward | 5 | 12 | |
| | | | 106 | 6 | Deposit |
| Lowe avenue | 45th street | 46th street | 642 | 6 | Account paving |
| Lowe avenue | 39th street | Southward | 534 | 6 | Revenue |
| Lowe avenue | Crossing | 45th street | 40 | 6 | Account paving |
| Lowe avenue | 73rd street | 300 ft. S. of 74th | 966 | 6 | Deposit |
| May street | Crossing | 76th street | 64 | 8 | Circ. mains |
| May street | 76th street | 77th street | 675 | 8 | Special assessment |
| May street | 75th street | 76th street | 559 | 6 | Special assessment |
| Morgan street | 76th street | 77th street | 634 | 8 | Special assessment |
| Morgan street | 83rd street | 84th street | 698 | 8 | Special assessment |
| Peoria street | 83rd street | 84th street | 698 | 6 | Special assessment |
| Princeton avenue | Crossing | 75th street | 42 | 6 | Circ. mains |
| Richmond street | 250 feet S. of 42nd street | Southward | 90 | 6 | Revenue |
| Richmond street | 340 feet S. of 42nd street | Southward | 96 | 6 | Revenue |
| Robey street | 70th place | 70th street | 288 | 8 | Rev. and Circ. |
| Robey street | 57th street | 59th street | 1,381 | 8 | Special assessment |
| Sangamon street | 83rd street | 84th street | 698 | 6 | Special assessment |
| Seeley avenue | Alley N. of 56th street | 57th street | 1,000 | 6 | Special assessment |
| Seeley avenue | 57th street | 59th street | 1,392 | 6 | Special assessment |
| Seeley avenue | Crossing | 63rd street | 90 | 6 | Account paving |
| 63rd street | Wood street | 258 ft. W. of Hamilton av. | 2,615 | 8 | Account paving |
| 63rd street | Marshfield avenue | Paulina street | 316 | 8 | Account paving |
| 63rd street | Hermitage avenue | Wood street | 326 | 8 | Account paving |
| 70th street | Crossing | Robey street | 27 | 6 | Circ. mains |
| 70th place | Vincennes road | Eastward | 134 | 6 | Account paving |
| 73rd street | California avenue | Kedzie avenue | 2,648 | 8 | Deposit |
| 73rd place | Ada street | Bishop street | 896 | 8 | Special assessment |
| 74th street | Ada street | Bishop street | 884 | 6 | Special assessment |
| 75th street | Center avenue | May street | 336 | 8 | Special assessment |
| 75th street | Vincennes road | Harvard avenue | 465 | 8 | Rev. and Circ. |
| 75th street | Eggleston avenue | Harvard avenue | 667 | 8 | Revenue |
| 79th street | Center avenue | Ada street | 890 | 12 | Special assessment |

## PIPE LAID IN TOWN OF LAKE—Continued.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| St. Louis avenue | 58th place | 59th street | 335 | 6 | Special assessment |
| Talman avenue | 46th street | 47th street | 638 | 8 | Revenue |
| Talman avenue | 53rd street | 55th street | 1,240 | 6 | Deposit |
| 39th street | 1090 feet W. of Center ave. | Westward | 278 | 8 | Fire protection |
| Transit avenue | Packers avenue | Eastward | 435 | 12 | Deposit |
| Washtenaw avenue | 46th street | 47th street | 634 | 8 | Revenue |
| Winchester avenue | Alley S. of 55th street | 59th street | 2,352 | 8 | Deposit |
| Total | | | 59,004 | | |
| Add Branch Pipe for Hydrants | | | 12 | 4 | |
| Add Branch Pipe for Hydrants | | | 2,961 | 6 | |
| Add Branch Pipe for Hydrants | | | 267 | 8 | |
| Total feet of pipe laid in Town of Lake | | | 62,244 | | |

## PIPE LAID IN JEFFERSON.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Addison | Crossing | Albany | 24 | 8 | Account paving |
| Addison | Crossing | Troy | 70 | 8 | Special assessment |
| Addison | Lowell avenue | 46th avenue | 1,660 | 8 | Special assessment |
| Albany avenue | Irving Park boulevard | Southward | 170 | 6 | Account paving |
| Alley W. of Avers | Addison street | Avondale av | 947 | 6 | Deposit |
| Alley W. of Hermitage avenue | 260 ft. N. of Cullom avenue | Northward | 180 | 6 | Deposit |
| Argyle street | 257 ft. W. of Lincoln avenue | Westward | 100 | 6 | Deposit |
| Avers avenue | Crossing | Fullerton avenue | 74 | 8 | Account paving |
| Avers avenue | Crossing | Cortland street | 46 | 6 | Account paving |
| Avers avenue | Wilson avenue | Leland avenue | 627 | 8 | Deposit |
| Avers avenue | Leland avenue | Northward | 192 | 8 | Revenue |
| Bernard avenue | Leland avenue | 430 ft. N. of Ainslie street | 1,746 | 8 | Deposit |
| Berteau avenue | Spaulding avenue | Eastward | 60 | 6 | Revenue |
| Byron street | Crossing | 60th avenue | 40 | 6 | Circ. mains |
| California avenue | Montrose avenue | Manor avenue | 866 | 8 | Deposit |
| California avenue | 150 ft. N. of Melrose street | Roscoe street | 756 | 6 | Rev. & circ. mains |
| Carmen avenue | 51st avenue | 52nd avenue | 653 | 6 | Revenue |
| Catalpa avenue | 50th court | Westward | 100 | 8 | Revenue |
| Central Pk avenue | Armitage avenue | Dickens avenue | 594 | 8 | Account paving |
| Central Pk avenue | 160 ft. N. of Dickens avenue | Costello avenue | 146 | 8 | Account paving |
| Christiana avenue | Laurence avenue | Argyle street | 1,284 | 8 | Deposit |
| Cornelia avenue | Crossing | 40th avenue | 41 | 6 | Special assessment |
| Cornelia avenue | Crossing | Lawndale avenue | 68 | 8 | Special assessment |
| Cortland street | Spaulding avenue | Westward | 238 | 8 | Account paving |
| Cortland street | 80 ft. W. of 48th court | Grand avenue | 324 | 8 | Revenue |
| Cullom avenue | 48th avenue | Westward | 363 | 8 | Revenue |
| Cullom avenue | 49th avenue | Westward | 602 | 8 | Revenue |
| Cullom avenue | 49th avenue | Eastward | 266 | 8 | Revenue |
| Cullom avenue | Crossing | Spaulding avenue | 44 | 6 | Special assessment |
| Cuyler avenue | 47th avenue | Westward | 232 | 6 | Special assessment |
| Dakin street | Crossing | 60th avenue | 40 | 6 | Circuit mains |
| Dakin street | Crossing | 56th avenue | 24 | 6 | Circuit mains |
| Drake avenue | Grace street | Waveland avenue | 661 | 8 | Revenue |
| Drake avenue | Lawrence avenue | Southward | 340 | 8 | Deposit |
| Drake avenue | Wilson avenue | Montrose avenue | 1,310 | 6 | Special assessment |
| Eastwood avenue | Crossing | Manor avenue | 30 | 8 | Deposit |
| Eastwood avenue | Campbell avenue | Rockwell street | 604 | 8 | Deposit |
| Eastwood avenue | Sacramento avenue | Manor avenue | 782 | 8 | Deposit |

## PIPE LAID IN JEFFERSON—Continued.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Eberly avenue | Elston avenue | Waveland avenue | 1,005 | 6 | Revenue |
| Eberly avenue | Lawrence avenue | Leland avenue | 639 | 8 | Deposit |
| Eberly avenue | Leland avenue | Wilson avenue | 727 | 8 | Deposit |
| Eddy street | 40th avenue | 41st court | 1,088 | 6 | Rev. & circ. mains |
| Eddy street | 48th avenue | 52nd avenue | 2,647 | 8 | Special assessment |
| 40th avenue | Roscoe street | Eddy street | 1,041 | 8 | Special assessment |
| 40th court | Milwaukee avenue | School street | 336 | 6 | Revenue |
| 43rd avenue | Roscoe street | Milwaukee avenue | 1,118 | 8 | Special assessment |
| 43rd court | Sunnyside avenue | Northward | 192 | 8 | Council order |
| 43rd court | Crossing | Cortland street | 72 | 6 | Account paving |
| 44th avenue | Fullerton avenue | Belden avenue | 642 | 8 | Deposit |
| 44th avenue | Crossing | Addison street | 41 | 8 | Special assessment |
| 45th avenue | Crossing | Addison street | 69 | 8 | Special assessment |
| 45th court | Roscoe street | Addison street | 1,292 | 8 | Special assessment |
| 45th avenue | Roscoe street | Addison street | 1,292 | 8 | Special assessment |
| 45th court | Crossing | Addison street | 42 | 8 | Special assessment |
| 46th avenue | Crossing | Addison street | 41 | 8 | Special assessment |
| 46th avenue | Roscoe street | Addison street | 1,292 | 8 | Special assessment |
| 48th avenue | Crossing | Greenwood terrace | 50 | 12 | Special assessment |
| 48th avenue | School street | Eddy street | 1,666 | 8 | Special assessment |
| 48th avenue | Greenwood terrace | Nevada street | 285 | 12 | Special assessment |
| 50th avenue | Lawrence avenue | Avondale avenue | 835 | 8 | Deposit |
| 50th court | Lawrence avenue | Avondale avenue | 619 | 6 | Deposit |
| 51st avenue | Berteau avenue | Southward | 205 | 8 | Revenue |
| 51st avenue | 165 ft. S. of Berteau avenue. | Southward | 52 | 8 | Deposit |
| 56th avenue | Irving Park boulevard | Dakin street | 351 | 8 | Circuit mains |
| 58th avenue | Bernice avenue | Alley N. of Addison street | 1,511 | 8 | Deposit |
| Francisco avenue | Eastwood avenue | Northwestern Elevated R. R. | 195 | 8 | Deposit |
| Francisco avenue | Alley N. of Montrose avenue. | Wilson avenue | 1,115 | 8 | Deposit |
| Grace street | 41st court | 42nd court | 817 | 8 | Account paving |
| Grace street | 41st court | Eastward | 238 | 8 | Account paving |
| Greenwood terrace | 46th avenue | 48th avenue | 1,215 | 8 | Special assessment |
| Greenwood terrace | 49th avenue | 50th avenue | 666 | 6 | Special assessment |
| Hamlin avenue | Wellington avenue | Northeastward | 420 | 6 | Circ. mains |
| Hamlin avenue | Milwaukee avenue | Southwestward | 300 | 6 | Revenue |
| Hamlin avenue | Belmont avenue | Northward | 352 | 8 | Revenue |
| Harding avenue | Armitage avenue | Cortland street | 576 | 6 | Revenue |
| Hamlin avenue | Grace street | Northward | 382 | 6 | Deposit & revenue |
| Harding avenue | Crossing | Fullerton avenue | 74 | 8 | Account paving |
| Harding avenue | 134 feet N. of Leland avenue. | Alley S. of Lawrence avenue. | 326 | 6 | Revenue |
| Higgins avenue | 56th avenue | Indian Boundary Line | 895 | 6 | Special assessment |
| Homer street | 285 feet W. of 45th avenue | Westward | 252 | 6 | Revenue |

| | | | | | |
|---|---|---|---|---|---|
| Humboldt street | Alley N. of Montrose avenue | Wilson avenue | 1,117 | 8 | Deposit |
| Humboldt avenue | 69th avenue | 70th avenue | 485 | 6 | Special assessment |
| Hutchinson street | Crossing | Spaulding avenue | 44 | 6 | Special assessment |
| Irving Park boulevard | Clover street | Westward | 84 | 8 | Revenue |
| Kimball avenue | Leland avenue | Ainslie street | 1,880 | 8 | Deposit |
| Lawndale avenue | School street | Eddy street | 1,704 | 6 | Special assessment |
| Lawndale avenue | Crossing | Fullerton avenue | 74 | 8 | Account paving |
| Lawrence avenue | 57th avenue | 58th avenue | 614 | 8 | Revenue & circuit |
| Lawrence avenue | Central Park avenue | Christiana avenue | 1,619 | 12 | Deposit |
| Lawrence avenue | Christiana avenue | Eastward | 146 | 12 | Deposit |
| Lawrence avenue | Elston avenue | 44th avenue | 733 | 8 | Deposit |
| Lawrence avenue | Crossing | 50th avenue | 30 | 8 | Deposit |
| Leland avenue | Sacramento avenue | Manor avenue | 498 | 8 | Deposit |
| Leland avenue | Crossing | Sacramento avenue | 48 | 8 | Account paving |
| Linden place | 420 feet E. of Humboldt st. | Sacramento avenue | 985 | 6 | Special assessment |
| Manor avenue | Wilson avenue | Southward | 520 | 8 | Deposit |
| Manor avenue | Northwestern Elevated R. R. | Eastward | 250 | 8 | Deposit |
| Manor avenue | Crossing | Leland avenue | 34 | 8 | Deposit |
| Manor avenue | Leland avenue | Northwestern Elevated R. R. | 196 | 8 | Deposit |
| Maplewood avenue | Wilson avenue | Montrose avenue | 1,321 | 8 | Deposit |
| Montrose avenue | 52nd avenue | Eastward | 34 | 8 | Revenue |
| Mozart street | Alley N. of Montrose avenue | Wilson avenue | 1,121 | 8 | Deposit |
| Nevada street | 48th avenue | 380 feet E. of 50th avenue | 920 | 8 | Special assessment |
| Newport avenue | Crossing | 40th avenue | 41 | 6 | Special assessment |
| Olive street | Clark street | Southport avenue | 1,067 | 8 | Deposit & circuit |
| Palmer square | Kedzie avenue | Eastward | 288 | 8 | Revenue |
| Patterson avenue | 48th avenue | 52nd avenue | 2,634 | 6 | Deposit |
| Pensacola avenue | 48th avenue | Westward | 342 | 8 | Revenue |
| Pensacola avenue | Milwaukee avenue | 52nd avenue | 958 | 8 | Revenue |
| Pensacola avenue | Crossing | Spaulding avenue | 44 | 6 | Special assessment |
| Roscoe street | Crossing | 40th avenue | 70 | 8 | Special assessment |
| Roscoe street | C., M. & St. P. R. R. | 46th avenue | 1,399 | 8 | Special assessment |
| Sacramento avenue | Crossing | Linden place | 41 | 8 | Special assessment |
| Sawyer avenue | Montrose avenue | Berteau avenue | 1,310 | 6 | Special assessment |
| School street | Crossing | California avenue | 42 | 8 | Circuit mains |
| 60th avenue | Irving Park boulevard | Byron street | 677 | 12 | Circuit mains |
| 69th avenue | Belden avenue | Humboldt avenue | 695 | 6 | Special assessment |
| 70th avenue | Dickens avenue | Humboldt avenue | 641 | 6 | Special assessment |
| Spaulding avenue | 245 feet S. of Grace street | Southward | 146 | 8 | Revenue |
| Spaulding avenue | Lawrence avenue | Argyle street | 1,284 | 8 | Deposit |
| Spaulding avenue | Montrose avenue | Berteau avenue | 1,326 | 6 | Special assessment |

## PIPE LAID IN JEFFERSON—Continued.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Springfield avenue | Bloomingdale road | Cortland street | 579 | 8 | Revenue |
| St. Louis avenue | Lawrence avenue | Ainslie street | 621 | 8 | Deposit |
| Troy street | Waveland avenue | Addison street | 693 | 6 | Special assessment |
| Warner | Campbell avenue | Western avenue | 681 | 6 | Deposit |
| Whipple | Elston avenue | Cornelia avenue | 552 | 6 | Special assessment |
| Wilson avenue | Mozart street | Chicago river | 599 | 6 | Deposit |
| Wilson avenue | Campbell avenue | Rockwell street | 605 | 8 | Deposit |
| Wilson avenue | Avers avenue | Springfield avenue | 334 | 8 | Deposit |
| Wilson avenue | Sacramento avenue | Mozart street | 974 | 12 | Deposit |
| Wilson avenue | Crossing | Mozart street | 28 | 12 | Deposit |
| Total | | | 76,405 | | |
| Add Branch Pipe for Hydrants | | | 12 | 4 | |
| | | | 2,556 | 6 | |
| Total feet of pipe laid in Jefferson | | | 78,973 | | |

## PIPE LAID IN LAKE VIEW.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Aldine avenue | Clark street | Evanston avenue | 2,038 | 8 | Account paving |
| Alley N. of Buena avenue | Kenmore avenue | Alley E. of Kenmore Av. | 183 | 6 | Council order |
| Alley E. of Kenmore avenue | Montrose avenue | Alley N. of Buena avenue | 1,025 | 6 | Council order |
| Ashland avenue | Leland avenue | Sunnyside avenue | 1,306 | 8 | Account paving |
| Barry avenue | Leavitt street | Hoyne avenue | 646 | 6 | Account paving |
| Barry avenue | Ashland avenue | Racine avenue | 2,330 | 8 | Account paving |
| Belleplaine avenue | E. Ravenswood Park | Hermitage avenue | 402 | 6 | Special assessment |
| Belmont avenue | Halsted street | Evanston avenue | 1,273 | 12 | Account paving |
| Belmont avenue | Ashland avenue | Sheffield avenue | 3,950 | 12 | Account paving |
| Berwyn avenue | Bowmanville avenue | Oakley avenue | 445 | 6 | Rev. and Circ. |
| Bissell street | Crossing | School street | 48 | 8 | Account paving |
| Bradley place | Crossing | Lincoln street | 45 | 6 | Account paving |
| Bradley place | Crossing | Leavitt street | 25 | 6 | Deposit |
| Claremont avenue | Crossing | Sunnyside avenue | 56 | 6 | Account paving |
| Craft place | Crossing | Aldine avenue | 48 | 6 | Account paving |
| Diversey court | Crossing | Wrightwood avenue | 40 | 8 | Account paving |
| E. Ravenswood Park | Crossing | School street | 25 | 6 | Account paving |
| E. Ravenswood Park | Crossing | Peterson avenue | 46 | 8 | Special assessment |
| Edgewater place | Hermitage avenue | E. Ravenswood Park | 387 | 6 | Revenue |
| Fletcher street | Clark street | Sheffield avenue | 1,075 | 8 | Account paving |
| George street | Racine street | Seminary avenue | 648 | 6 | Account paving |
| Glenlake avenue | Clark street | Paulina street | 430 | 6 | Special assessment |
| Hamilton avenue | Giddings avenue | Leland avenue | 335 | 6 | Revenue |
| Hermitage avenue | Cullom avenue | Montrose avenue | 653 | 6 | Account paving |
| Hermitage avenue | Montrose avenue | Wilson avenue | 1,276 | 6 | Account paving |
| Hermitage avenue | Crossing | Peterson avenue | 46 | 8 | Special assessment |
| High street | Crossing | Greenwood terrace | 47 | 6 | Account paving |
| Irving avenue | Addison street | Waveland avenue | 683 | 6 | Deposit |
| Irving avenue | Addison street | Cornelia avenue | 712 | 6 | Deposit |
| Irving avenue | Grace street | Waveland avenue | 663 | 6 | Deposit |
| Irving Park boulevard | 43rd avenue | Westward | 144 | 8 | Revenue |
| Lake View Pumping Station | ........ | ........ | 698<br>56<br>31<br>30 | 36<br>48<br>42<br>8 | Special appro. |

## PIPE LAID IN LAKE VIEW—Continued.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Leavitt street | Lawrence avenue | Wilson avenue | 1,334 | 8 | Account paving |
| Leavitt street | Crossing | Barry avenue | 19 | 6 | Account paving |
| Leavitt street | Grace street | Waveland avenue | 664 | 8 | Deposit |
| Leland avenue | Clark street | Ashland avenue | 536 | 6 | Account paving |
| Lill avenue | Halsted street | Lincoln avenue | 900 | 8 | Account paving |
| Lill avenue | Sheffield avenue | Racine avenue | 1,169 | 8 | Account paving |
| Lincoln street | 343 ft. N. of Balmoral avenue | Northward | 204 | 6 | Revenue |
| Lincoln street | Eddy street | Northward | 144 | 6 | Revenue |
| Lincoln street | Waveland avenue | Bradley place | 324 | 6 | Account paving |
| Magnolia avenue | Thorndale avenue | Peterson avenue | 235 | 8 | Special assessment |
| Melrose street | Crossing | Paulina street | 65 | 6 | Account paving |
| Melrose street | Crossing | Southport avenue | 53 | 6 | Account paving |
| Montana street | Lincoln avenue | Surrey court | 2,494 | 8 | Account paving |
| Oakley avenue | Crossing | Sunnyside avenue | 56 | 6 | Account paving |
| Oakley avenue | Byron street | Grace street | 674 | 6 | Deposit |
| Osgood street | Crossing | Belmont avenue | 44 | 6 | Account paving |
| Otto street | Crossing | Paulina street | 44 | 6 | Account paving |
| Paulina street | Lawrence avenue | Ainslie street | 1,041 | 6 | Account paving |
| Paulina street | Berteau avenue | Montrose avenue | 1,310 | 8 | Account paving |
| Paulina street | Granville avenue | Glenlake avenue | 387 | 6 | Revenue |
| Perry street | Crossing | Roscoe street | 46 | 6 | Account paving |
| Perry street | Crossing | Irving Park boulevard | 15<br>46 | 8<br>6 | Account paving |
| Peterson avenue | Clark street | Paulina street | 433 | 8 | Special assessment |
| Peterson avenue | Alley E. of W. Ravensw'd pk. | Ridge avenue | 735 | 8 | Special assessment |
| Peterson avenue | Crossing | Ridge avenue | 30 | 6 | Special assessment |
| School street | Crossing | Paulina street | 65 | 8 | Account paving |
| School street | Racine avenue | 277 ft. E. of Herndon street | 362 | 6 | Account paving |
| School street | Ashland avenue | Southport avenue | 1,294<br>23 | 8<br>6 | Account paving |
| School street | Lincoln street | W. Ravenswood Park | 530 | 8 | Account paving |
| School street | E. Ravenswood Park | Paulina street | 618 | 8 | Account paving |
| School street | Lincoln avenue | Paulina street | 251 | 8 | Account paving |
| School street | Lincoln avenue | Ashland avenue | 283 | 8 | Account paving |
| Seminary avenue | Wellington avenue | Belmont avenue | 1,188 | 8 | Account paving |
| Seminary avenue | Crossing | Barry avenue | 68 | 8 | Account paving |

| | | | | | |
|---|---|---|---|---|---|
| Seminary avenue | Crossing | Belmont avenue | 60 | 6 | Account paving |
| Southport avenue | Crossing | Winnemac avenue | 132 | 8 | Circ. mains. |
| Sunnyside avenue | Clark street | Dover street | 370 | 8 | Revenue |
| Western avenue | Lawrence avenue | Lincoln avenue | 224 | 8 | Revenue |
| Wellington street | Ashland avenue | Paulina street | 640 | 8 | Special assessment |
| W. Ravenswood Park | Crossing | School street | 55 | 6 | Account paving |
| Wilson avenue | E. Ravenswood Park | Eastward | 238 | 6 | Account paving |
| Wilson avenue | Kenmore avenue | Westward | 101 | 6 | Account paving |
| Winnemac avenue | Southport avenue | Westward | 231 | 6 | Circ. mains |
| Winnemac avenue | Crossing | Southport avenue | 33 | 6 | Circ. mains |
| Total | | | 41,626 | | |
| Add Branch Pipe for Hydrants | | | 1,777 | 6 | |
| Total feet of pipe laid in Lake View | | | 43,403 | | |

## PIPE LAID IN CALUMET.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Aberdeen street | 99th street | 103rd street | 2,624 | 8 | Special assessment |
| Aberdeen street | 98th street | Southward | 444 | 8 | Deposit |
| Ada street | 87th street | 88th street | 675 | 6 | Special assessment |
| Ashland avenue | 121st street | 123rd street | 1,266 | 8 | Deposit |
| Bishop street | 87th street | 91st street | 2,649 | 6 | Special assessment |
| Eggleston avenue | 117th street | 118th street | 665 | 6 | Special assessment |
| Eggleston avenue | 115th street | 116th street | 665 | 6 | Special assessment |
| Elizabeth street | 93 ft. N. of 89th street | Northward | 174 | 6 | Deposit |
| Justine street | 120th street | 121st street | 646 | 8 | Deposit |
| Lafayette street | Crossing | 108th street | 27 | 8 | Special assessment |
| La Salle street | Crossing | 108th street | 27 | 8 | Special assessment |
| Lowe avenue | 104th street | Northward | 414 | 8 | Revenue |
| May street | 100th street | 103rd street | 1,954 | 8 | Special assessment |
| May street | 87th street | 89th street | 1,316 | 8 | Special assessment |
| 97th street | Crossing | Winston avenue | 52 | 6 | Account paving |
| 99th street | Prospect avenue | Westward | 209 | 8 | Account paving |
| 101st street | Crossing | Aberdeen street | 89 | 8 | Special assessment |
| 101st street | Crossing | May street | 72 | 8 | Special assessment |
| 102nd street | Crossing | May street | 72 | 8 | Special assessment |
| 102nd street | Crossing | Aberdeen street | 89 | 8 | Special assessment |
| 103rd street | Crossing | State street | 72 | 6 | Special assessment |
| 104th street | Crossing | State street | 68 | 8 | Special assessment |
| 104th place | Crossing | State street | 43 | 8 | Special assessment |
| 105th street | Crossing | State street | 41 | 8 | Special assessment |
| 108th street | Wentworth avenue | State street | 1,242 | 6 | Special assessment |
| 108th place | Wentworth avenue | 544 ft. W. of Princeton av. | 1,176 | 8 | Deposit |
| 115th street | Halsted street | Lowe avenue | 969 | 12 | Special assessment |
| 120th street | Center avenue | Westward | 510 | 8 | Fire protection |
| 120th street | Loomis street | Justine street | 993 | 8 | Deposit |
| 121st street | Justine street | Ashland avenue | 374 | 8 | Deposit |
| Parnell avenue | 115th street | 117th street | 1,340 | 6 | Special assessment |
| Perry avenue | Crossing | 108th street | 72 | 8 | Special assessment |
| State street | 103rd street | 105th street | 1,356 | 8 | Special assessment |
| Union avenue | Crossing | 115th street | 72 | 8 | Special assessment |
| Union avenue | 124th street | 125th street | 665 | 8 | Special assessment |
| Winchester avenue | 97th street | Northward | 305 | 6 | Revenue |
| Winchester avenue | 94th street | 95th street | 706 | 6 | Special assessment |
| Total |  |  | 24,133 |  |  |
| Add Branch Pipe for Hydrants |  |  | 574 | 6 |  |
| **Total feet of pipe laid in Calumet** |  |  | 24,707 |  |  |

## PIPE LAID IN ROGERS PARK.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Alley W. of Ridge avenue | Lunt avenue | Morse avenue | 615 | 6 | Revenue |
| Central avenue | Greenleaf avenue | Lunt avenue | 445 | 6 | Revenue & Circ. |
| Central avenue | Estes avenue | Kenilworth avenue | 446 | 6 | Revenue |
| Home avenue | Robey street | Murphy street | 750 | 6 | Revenue |
| Howard avenue | Crossing | Perry street | 24 | 6 | Revenue |
| Morton avenue | Morse avenue | Northward | 350 | 6 | Revenue |
| North Shore avenue | Sheridan road | Eastward | 877 | 6 | Rev. & Acc. paving |
| Perry street | Howard avenue | Alley N. of Birchwood av. | 193 | 6 | Revenue |
| Phillips avenue | Ridge avenue | Robey street | 838 | 6 | Deposit |
| Southport avenue | Farwell avenue | Alley N. of Farwell avenue | 200 | 6 | Deposit |
|  |  |  | 4,738 |  |  |
| Add Branch Pipe for Hydrants |  |  | 110 | 6 |  |
| Total feet of pipe laid in Rogers Park |  |  | 4,848 |  |  |

## PIPE LAID IN NORWOOD PARK.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Evergreen avenue | Raven street | Northward | 277 | 6 | Revenue |
| Raven street | Evergreen avenue | Westward | 135 | 6 | Deposit & Revenue |
| Total |  |  | 412 |  |  |
| Add Branch Pipe for Hydrants |  |  | 12 | 6 |  |
| Total feet of pipe laid in Norwood Park |  |  | 424 |  |  |

## PIPE LAID IN NORTH DIVISION.

| STREET | FROM | TO | Amount in Ft. | Dia. in In. | How Laid |
|---|---|---|---|---|---|
| Commonwealth avenue | Fullerton avenue | Belden avenue | 645 | 6 | Deposit |
| Crooked street | Southport avenue | Clybourn place | 680 | 6 | Rev. and Circ. |
| Fullerton avenue | Larrabee street | Clark street | 871 | 24 | Feeder mains |
| Geary street | Walton place | Delaware place | 292 | 6 | Revenue |
| Hammond street | Eugenie street | Tell court | 425 | 6 | Account paving |
| Langdon street | Uhland street | Clybourn avenue | 317 | 6 | Account paving |
| Larrabee street | Belden avenue | Fullerton avenue | 701<br>36 | 24<br>8 | Feeder mains |
| North avenue | Cherry street | Westward | 48 | 6 | Fire Protection |
| Oak street | Wells street | Westward | 187 | 8 | Account paving |
| Superior street | State street | Rush street | 588 | 8 | Account paving |
| Uhland street | Rees street | Blackhawk street | 1,173 | 6 | Account paving |
| Total | | | 5,963 | | |
| Add branch pipe for hydrants | | | 163 | 6 | |
| Add branch pipe for hydrants | | | 7 | 8 | |
| Total feet of pipe laid in North Division | | | 6,133 | | |

## RECAPITULATION OF PIPE LAID DURING 1909, INCLUDING HYDRANT BRANCHES, DIVIDED TO SHOW WHY IT WAS LAID.

| WHY LAID | DIAMETER OF PIPE IN INCHES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 4-inch | 6-inch | 8-inch | 12-inch | 24-inch | 36-inch | 42-inch | 48-inch | Totals |
| Paid 10 cents per foot revenue | ........ | 18,518 | 12,944 | ........ | ........ | ........ | ........ | ........ | 31,462 |
| Laid on deposit | ........ | 23,661 | 44,920 | 4,737 | ........ | ........ | ........ | ........ | 73,318 |
| Laid for feeder | ........ | 386 | 15 | ........ | 1,572 | 140 | ........ | ........ | 2,113 |
| Laid by special assessment | ........ | 34,363 | 46,855 | 5,288 | ........ | ........ | ........ | ........ | 86,506 |
| Laid to replace mains of smaller size on account of paving | 280 | 29,446 | 55,240 | 8,652 | ........ | ........ | ........ | ........ | 93,618 |
| Chargeable to special appropriations | ........ | 5,411 | 3,692 | 677 | ........ | 698 | 31 | 56 | 10,565 |
| Laid under miscellaneous Council orders | ........ | 1,208 | 192 | ........ | ........ | ........ | ........ | ........ | 1,400 |
| Laid for fire protection and account sewer construction | ........ | 530 | 1,801 | ........ | ........ | ........ | ........ | ........ | 2,331 |
| Laid for track elevation | ........ | 430 | 632 | ........ | ........ | ........ | ........ | ........ | 1,062 |
| Laid for hydrant branches | 40 | 13,238 | 535 | ........ | ........ | ........ | ........ | ........ | 13,813 |
| Totals | 320 | 127,191 | 166,826 | 19,354 | 1,572 | 838 | 31 | 56 | 316,188 |

## RECAPITULATION OF PIPE LAID DURING 1909, INCLUDING HYDRANT BRANCHES.

| DIVISION | DIAMETER OF PIPE IN INCHES | | | | | | | | Total Length of Pipe in Feet |
|---|---|---|---|---|---|---|---|---|---|
| | 4-inch | 6-inch | 8-inch | 12-inch | 24-inch | 36-inch | 42-inch | 48-inch | |
| North | ........ | 3,779 | 782 | ........ | 1,572 | ........ | ........ | ........ | 6,133 |
| South | 105 | 4,445 | 11,931 | 3,213 | ........ | 140 | ........ | ........ | 19,834 |
| West | 191 | 24,150 | 20,677 | 741 | ........ | ........ | ........ | ........ | 45,759 |
| Hyde Park | ........ | 14,692 | 14,207 | 964 | ........ | ........ | ........ | ........ | 29,863 |
| Lake View | ........ | 15,340 | 22,055 | 5,223 | ........ | 698 | 31 | 54 | 43,403 |
| Lake | 12 | 25,066 | 32,701 | 4,465 | ........ | ........ | ........ | ........ | 62,244 |
| Jefferson | 12 | 26,570 | 48,612 | 3,779 | ........ | ........ | ........ | ........ | 78,973 |
| Calumet | ........ | 7,877 | 15,861 | 969 | ........ | ........ | ........ | ........ | 24,707 |
| Norwood Park | ........ | 424 | ........ | ........ | ........ | ........ | ........ | ........ | 424 |
| Rogers Park | ........ | 4,848 | ........ | ........ | ........ | ........ | ........ | ........ | 4,848 |
| Totals | 320 | 127,191 | 166,826 | 19,354 | 1,572 | 838 | 31 | 56 | 316,188 |

## TABLE SHOWING AMOUNT OF WATER PIPE IN THE CITY OF CHICAGO AT THE CLOSE OF 1909.

| Diameter of Pipe in Inches | 1908 | 1909 | | | |
|---|---|---|---|---|---|
| | Amount in Use in Feet | Amount Taken Up or Abandoned in Feet | Amount Laid in Feet | Grand Total in Feet | Grand Total in Miles |
| 48 | 2,873 | ............... | 56 | 2,929 | $\frac{2929}{5280}$ |
| 42 | 315 | ............... | 31 | 346 | $\frac{346}{5280}$ |
| 36 | 271,861 | 150 | 838 | 272,549 | $51\frac{3269}{5280}$ |
| 30 | 61,614 | ............... | ............... | 61,614 | $11\frac{3534}{5280}$ |
| 28 | 160 | ............... | ............... | 160 | $\frac{160}{5280}$ |
| 24 | 404,721 | ............... | 1,572 | 406,298 | $76\frac{5018}{5280}$ |
| 20 | 25,982 | ............... | ............... | 25,982 | $4\frac{4862}{5280}$ |
| 18 | 1,000 | ............... | ............... | 1,000 | $\frac{1000}{5280}$ |
| 16 | 359,059 | ............... | ............... | 359,059 | $68\frac{19}{5280}$ |
| 14 | 22,552 | ............... | ............... | 22,552 | $4\frac{1432}{5280}$ |
| 12 | 704,348 | ............... | 19,354 | 723,702 | $137\frac{342}{5280}$ |
| 10 | 42,094 | ............... | ............... | 42,094 | $7\frac{5134}{5280}$ |
| 8 | 2,677,077 | 3,006 | 166,826 | 2,840,897 | $538\frac{257}{5280}$ |
| 6 | 6,163,173 | 7,391 | 127,191 | 6,282,973 | $1,189\frac{5053}{5280}$ |
| 4 | 816,464 | 89,301 | 320 | 727,483 | $137\frac{4123}{5280}$ |
| 3 | 4,424 | ............... | ............... | 4,424 | $\frac{4424}{5280}$ |
| Totals in feet ..... | 11,557,717 | 99,848 | 316,188 | 11,774,057 | ............... |
| Totals in miles .... | $2,188\frac{5077}{5280}$ | $18\frac{4808}{5280}$ | $59\frac{4668}{5280}$ | ............... | $2,229\frac{4937}{5280}$ |

## WATER SURVEYS.

During the year 1909 forty-four districts were surveyed and house-to-house inspections were made in twelve of them. Thirty of these districts were laid out, surveyed and sub-divided, and are now ready for house-to-house inspection. Re-surveys were made in four districts where the house-to-house inspection was not completed in 1908.

The territory surveyed during 1909 is located in the older portion of the City and is principally a tenement house and manufacturing section. No complete and thorough inspection of the plumbing was ever made in this territory, and consequently a very high leakage exists from plumbing out of repair. One gallon in every three or four supplied to a district is probably lost from this source of leakage.

The total area surveyed to date covers about eighteen square miles and extends from North avenue to 39th street and from Western avenue to Lake Michigan. In addition to the surveys in the central portion of the City considerable work was done in the outlying sections where pressures were found to be low during the summer time.

Slip tests of the pumping engines were made for the pumping stations from time to time.

Measurements of flow were made during the year on large feeder mains throughout the City. These tests showed the velocity, volume, and direction of the flow in the larger mains, and this is useful information in directing the flow and maintaining the pressure in the distribution system.

## DETAILED DESCRIPTION OF DISTRICTS SURVEYED DURING 1909.

DISTRICT No. 2 B.—This district is located south of the Loop and is shown in plate No. 2. It has an area of 94 acres and is covered principally with freight houses and railway tracks. The waste and leakage above ground in this section was practically eliminated by the survey, but an underground leakage of approximately 828,000 gallons per day still remains. This leakage is not confined to any one locality, but is scattered over the entire district. It can be curtailed by stripping the mains and cutting off all service pipes not in use.

The total length of water mains in this district is 13,675 feet. This pipe can be stripped and repaired at a total estimated cost of $9,385.00. The repairs can be made at a much lower cost than this, however, if done at a time when the streets are being repaved. This would probably reduce the cost of the work about one-third.

A loss of 828,000 gallons of water per day by leakage at 3 cents per thousand gallons amounts to $9,066.00 per annum.

DISTRICT No. 2 D.—This large district lies along the lake front from Twelfth to Twenty-second street east of State street. It covers 310 acres and has a population of 12,000.

The total supply for this district was 5,740,000 gallons per day before the surveys began. A reduction of 28½ per cent, or 1,638,000 gallons per day, was made by the repair of defective plumbing fixtures.

The underground leakage in this section is very high, as indicated by the resurvey made after the plumbing was repaired. The minimum night rate shown by the resurvey was 80 per cent of the average daily rate of supply, or 2,437,500 gallons per day.

The reason for the high minimum night rate remaining in this section is undoubtedly due to the fact that the building changes have been rapid, resulting in abandoning, or replacing many old service pipes with new ones. The old service pipes after a time have become sources of leakage which does not show on the surface of the street. In a few places where the mains were exposed a large number of leaky service pipes were found and repaired, but the pipe joint leakage was found to be small. For data see Table No. 1.

DISTRICT No. 3.—This district is located immediately west of the River from Randolph to Harrison streets and west to Halsted street and covers 229 acres. It is a manufacturing and tenement house section with a population of about 6,900.

The water supply for this district was measured in April, 1909, and was at the rate of 5,380,000 gallons per day. A house to house inspection was made, and the defective plumbing was repaired. A resurvey was made in October, 1909, at which time the daily supply was 4,317,000 gallons, which showed a decrease of 1,063,000 gallons per day. This is a reduction of 20 per cent made by the repairing of the defective plumbing in the buildings.

The minimum night rate of supply in this district after repairing the plumbing fixtures was 3,500,000 gallons per day. About 2,000,000 gallons of this supply is estimated as loss, and is probably due to underground leakage.

The total revenue for water derived from this district was $58,194.00, of which 72 per cent was for metered water. After repairing the leakage from faulty plumbing, the supply passing through meters amounted to 38 per cent of the total supply. For data see Table No. 1.

DISTRICT No. 4.—This district is located along the lake front from 22nd street to 31st street, east of State street. It has a population of about 22,704 and an area of 504 acres. The water supply of this district was reduced by repairing the plumbing from 5,596,000 to 5,057,000 gallons per day, making a reduction of 539,000 gallons per day. The house to house inspections have not been completed. For data as far as completed see Table No. 1.

DISTRICT No. 5.—This district is located on the south side from 22nd street to 31st street west of State street to Princeton avenue. It has an area of 258 acres and a population of about 20,000. The total supply before the inspection was made was 3,258,000 gallons per day and after the inspection was 2,531,000 gallons per day. A reduction of 727,000 gallons per day or 29 per cent of the supply was made by the repairing of defective plumbing fixtures. The minimum night rate of supply after the inspection was 2,000,000 gallons per day, indicating considerable underground leakage.

The per capita consumption before the survey was made was 163 gallons, and after the plumbing was repaired was 127 gallons per capita. This is a reduction of 36 gallons per capita.

During the house to house inspection 2,471 places were inspected and 1,565 underground leaks were found and repaired. The house inspections showed that there were 1,269 hopper closets in this section and that most of them were found to be running continuously. These closets should be abolished by ordinance because there is no restriction in the use of water where these devices are employed. For data see Table No. 1.

DISTRICT No. 16.—This district is a north side section lying along the north branch of the Chicago River between Division street and Chicago avenue with Orleans street on the east. It has an area of 154 acres and a population of about 15,600.

The average daily supply before the survey was made was 3,228,000 gallons per day. After the inspection was made it was 2,476,000 gallons per day, a reduction of 752,000 gallons per day. The minimum night rate at the time of the resurvey was approximately 2,000,000 gallons per day, which indicates excessive underground leakage. The per capita consumption was reduced from 207 to 158 gallons per day by this survey.

During the house to house inspection 1,506 places were inspected and 639 underground leaks inside of the premises were found and repaired. The number of hopper closets reported in this district was 654. For data see Table No. 1.

DISTRICT No. 17.—This district is a section on the west side between Madison and Harrison streets from Centre avenue to Ashland avenue and has an area of 160 acres and a population of about 9,200. The survey work was begun here at the close of 1908, but was not completed until early in 1909.

The daily supply was reduced from 2,152,000 to 1,013,000 gallons per day by the repairing of defective plumbing fixtures. The per capita consumption was reduced from 236 to 110 gallons per capita, which is a reduction of over one-half of the supply.

This district is a good illustration of the serious condition of the plumbing throughout the tenement section of the west side of the City, and the reduction made shows what can be accomplished by repairing the defective plumbing. Many complaints of lack of pressure have been made for a long time past from this old portion of the city. No complete house to house inspection was ever made. For data see Table No. 1.

DISTRICT No. 18.—This is a section on the west side between Harrison and 12th streets from Centre avenue to Ashland avenue and has an area of 160 acres and a population of about 14,400.

Before the survey was made the supply was at the rate of 1,702,000 gallons per day, and after the same was completed the supply was 847,000 gallons per day. The per capita consumption was reduced from 118 to 59 gallons by repairing the leaky plumbing fixtures.

The number of places inspected during the survey was 1,268 and the number of underground leaks found was 339. There is a high rate of underground leakage in this section. For data see Table No. 1.

DISTRICTS Nos. 21, 22 AND 23.—This territory is between Princeton avenue and the Chicago River from 22nd to 31st streets and has an area of 749 acres or 1.17 square miles. It is a low-class dwelling section and has a population of about 37,232. The total daily supply before the survey was made was 6,678,500 gallons per day, and after the plumbing was repaired was 4,483,500 gallons per day. The total metered consumption was only 702,000 gallons per day. The average minimum night rate after the inspection was made was 3,800,000 gallons per day, or 85 per cent of the average daily supply.

The plumbing in this territory was found to be in bad condition. A total of 13,806 places were inspected, 961 closets were leaking and 1,859 underground leaks inside of the premises were found. A large number of the leaky closets were of the long hopper type directly connected to the water pipe.

The reduction made by repairing the plumbing fixtures was 2,195,000 gallons per day. The reduction in consumption amounted to 60 gallons per capita, or a reduction from 180 to 120 gallons per capita per day.

Assuming 25 per cent of the minimum night rate as legitimate consumption, there is an underground leakage of approximately 2,850,000 gallons per day, or 77 gallons per capita remaining in this territory. For data see Table No. 1.

DISTRICTS NOS. 29, 30, 31 AND 32.—This section is located between Halsted street and Ashland avenue, from 12th to 22nd streets, in a thickly populated portion of the city on the west side, and has an area of one square mile. It is principally a tenement house section, but has many factories along 16th and 22nd streets. The population numbers about 65,571.

The average daily supply was 9,128,000 gallons, or 139 gallons per capita per day. The metered supply amounted to 622,100 gallons per day. The leakage in this section was high, as the average minimum night rate of supply ranged from 81 to 87 per cent of the average daily supply.

The house to house inspection was not complete at the end of the year. The surveys showed that the average daily supply was decreased by repairing the plumbing from 9,128,000 to 5,614,000 gallons, a reduction of 3,514,000 gallons per day. This is equivalent to a reduction of 38.5 per cent of the supply.

A summary of the house to house inspection reports shows that in 6,767 places were inspected, 3,286 leaky fixtures were repaired and 2,687 underground leaks inside of the premises were found. The reports show there are 3,721 hopper closets in this square mile of territory. For data see Table No. 1.

### DISTRICTS READY FOR HOUSE TO HOUSE INSPECTION.

DISTRICTS NOS. 19, 20, 37, 38, 39, 49, 50 AND 51.—These districts are residence sections lying on the north side of the City between North avenue and Division street, extending from Lake Michigan to Ashland avenue. They cover a total area of 1,266 acres, and have a combined population of about 100,374. The average daily supply was measured in these districts, and they were sub-divided to ascertain the supply by streets. The districts are now ready for house to house inspections, which will be made during the first six months of the year 1910. The minimum night rate of flow in these districts indicates a high rate of leakage. For data see Table No. 1.

(B) DISTRICTS NOS. 33, 34, 44 AND 45.—This is a tenement house section lying south of Chicago avenue to Madison street and west of Halsted street to Ashland avenue. These four districts have a combined area of one square mile, and a total population of about 41,137. The districts have been surveyed and sub-divided, and are ready for house to house inspections, which will be made during the year 1910. The flow curves showing the daily average supply of these districts indicate an excessive underground leakage. For data see Table No. 1.

(C) DISTRICTS NOS. 24, 25, 26, 27, 28, 35, 36, 40, 41, 42, 43, 52 AND 53.—These districts are located on the south side of the City between 31st and 39th streets, extending from Lake Michigan west to Western avenue. The character of the population in these districts varies considerably, ranging from the better residence section on the east to the tenement house section and the homes of the poor in that part of the territory along the Chicago River. The combined area of these 13 districts is

2,629 acres, and the combined population numbers about 225,136. This territory lies in the older residence section of the south side where no previous plumbing inspections are of record, and where hopper closets were installed in great numbers during the past. The inspections made in the districts where hopper closets prevail in large numbers have little effect in curtailing the lavish waste from these devices for the reason that the owners and tenants will persist in permitting these closets to run continuously during the cold weather to keep them from freezing and during the summer time for supposed sanitary reasons. These districts will be inspected during the year 1910. For data see Table No. 1.

(D) DISTRICTS Nos. 46, 47 AND 48.—This is a manufacturing and tenement house section lying west of Ashland avenue to Western avenue between 12th street and the Chicago River. The first survey in this section indicates that the plumbing leakage is excessive, and the high minimum night rate indicates a large underground leakage. A house to house inspection will be made in these districts during 1910. See Table No. 1.

For data for the districts see Table No. 1.

### HOUSE TO HOUSE INSPECTION.

During the first seven months of this year nine men were employed continuously on house to house inspections of plumbing and in August this force was increased to twenty men, the next three months to thirty men. During December twenty men were employed in making inspections.

An advantage derived from these inspections was the improvement in the class of work done by local plumbers. As soon as the tenant or property owner learned the work was being inspected by the City, applications were frequently received to inspect the repairs when completed.

### UNDERGROUND LEAKAGE.

This leakage is an underground loss of water due to defects in the water mains or service pipes. The water main joint leakage is generally small, but occasionally large leaks are found from defective pipe joints. The principal underground loss of water is undoubtedly due to a relatively few leaky service pipes. The damage to mains from stray electrolytic currents probably causes more or less underground leakage. The extent of this damage is not known.

When the mains were originally laid a service pipe was provided for every 25 feet on both sides of the street. Many of these services are in use, but the greater proportion of them have never been used or have been disconnected or abandoned. The buffalo boxes set at the curb or in the sidewalk space in order to control the service pipe have in many instances disappeared with the street improvements, etc. On this account a large per cent of the service pipes originally installed cannot be located.

The total underground leakage in any district can be approximately determined after the house plumbing has been repaired by assuming the minimum night rate to be mostly leakage. A study of the conditions will generally show that there is some legitimate consumption during the small hours of the night and that this amount will vary in different districts. The legitimate consumption ranges from 10 to 50 per cent of the minimum night rate of supply, but 25 per cent is applicable to a majority of the districts. About 75 per cent (more or less according to conditions) of the minimum night rate remaining after the house plumbing has been repaired may be classed as leakage.

The area surveyed thus far lies in the older portion of the City, and it is believed the information obtained will apply in a measure to all of the City. This information indicates an excessive underground leakage, which will increase in time unless measures are adopted to prevent the same. The information further points to the fact that the underground leakage is mainly due to old service pipes, which are not in use.

### COST OF SURVEYS.

The appropriation for the cost of water surveys for the year 1909 amounted to $55,000.00, of which $44,065.95 was spent in carrying out the work.

The following statement shows a detailed account of the amounts spent on the various items of the service, which was compiled from the accounts kept by this division.

#### EXPENDITURES BY WATER SURVEYS FOR 1909.

| | | |
|---|---|---|
| Salaries of Engineers and Draughtsman | | $ 8,634.96 |
| Salaries of Plumbing Inspectors at $117.00 per month | | 26,710.62 |
| Labor | Drivers and Labor | 3,434.01 |
| | Mason | 225.40 |
| | Tappers | 106.91 |
| Teaming | | 216.83 |
| Livery, Horse Shoeing, New Wagon and Repairs | | 859.59 |
| Transportation, Car fare, Local Railway Tickets | | 1,218.75 |
| Materials | Mason Work | 204.19 |
| | Ferrules and Miscellaneous Items | 62.43 |
| | Repairs to Equipment | 143.67 |
| | Supplies from Water Works Shops | 457.58 |
| Blue Printing | | 32.28 |
| Pitometer Rental and Repairs | | 1,642.73 |
| Emergency (Including Meals on Night Survey Tests) | | 116.00 |
| Total Expenditures | | $44.065.95 |

All items in the above are covered by requisition excepting salaries of engineers, draughtsman and plumbing inspectors.

### TABLE SHOWING
### REVENUE FROM METERED AND UNMETERED WATER SUPPLY
### FOR
### DISTRICTS INSPECTED BY WATER SURVEYS,
### CITY OF CHICAGO, 1909.

| | | | SUPPLY IN GALLONS PER DAY | | | REVENUE PER ANNUM | | REVENUE PER 1,000 GALLONS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | For Unmetered Supply | | | |
| | | | | | | | | | | | Increase | |
| District No. | Area in Acres | Population 1908 | Total Metered before Inspection | Total Unmetered before Inspection | Total Saving after Inspection | Total Metered | Total Frontage | For Metered Supply | Before Inspection | After Inspection | Am't | Percentage |
| 2-B | 94 | 600 | 275,920 | 1,344,080 | 200,000 | $ 7,069.10 | $ 991.00 | 0.07 | $0.002 | $0.0033 | $0.0013 | 65. % |
| 2-C | 149 | 5,128 | 1,217,980 | 2,684,020 | .......... | 31,204.60 | 8,200.50 | 0.07 | .008 | .016 | .008 | 100. |
| 2-D | 310 | 12,000 | 1,514.502 | 4,225,600 | 1,638,000 | 38,801.55 | 15,864.00 | 0.07 | .0102 | .0168 | .0066 | 64.7 |
| 3 | 229 | 6,900 | 1,640,000 | 3,740,000 | 1,063,000 | 41,902.00 | 16,292.00 | 0.07 | .0119 | .0166 | .0047 | 39.5 |
| 4 | 504 | 22,704 | 1,410,500 | 4,185,500 | 539,000 | 36,136.12 | 30,534.00 | 0.07 | .02 | .0229 | .0029 | 145. |
| 5 | 258 | 20,000 | 552,970 | 2,705,030 | 727,000 | 14,167.20 | 28,236.50 | 0.07 | .0288 | .0391 | .0103 | 35.8 |
| 16 | 154 | 15,600 | 387,900 | 2,840,000 | 751,500 | 9,938.00 | 20,026.00 | 0.07 | .0193 | .0262 | .0069 | 35.8 |
| 17 | 160 | 9,200 | 282,200 | 1,889,200 | 1,159,000 | 7,230.65 | 19,691.50 | 0.07 | .0284 | .0739 | .0455 | 160. |
| 18 | 160 | 14,400 | 43,900 | 1,658,100 | 855,000 | 1,124.70 | 22,524.75 | 0.07 | .0371 | .0767 | .0396 | 107. |
| 21 | 164 | 7,221 | 236,800 | 1,420,200 | 93,000 | 6,066.83 | 10,053.25 | 0.07 | .0193 | .0279 | .0086 | 44.6 |
| 22 | 215 | 14,511 | 95,240 | 2,099,760 | 1,048,000 | 2,440.06 | 18,251.15 | 0.07 | .024 | .0476 | .0236 | 98.4 |
| 23 | 370 | 15,500 | 370,530 | 2,456,470 | 714,000 | 9,492.98 | 18,212.50 | 0.07 | .02 | .0288 | .0088 | 44. |
| 26 | 160 | 8,096 | 219,720 | 1,312,280 | 312,000 | 5,613.70 | 11,595.75 | 0.07 | .0262 | .0353 | .0091 | 34.8 |
| 29 | 160 | 17.942 | 267,600 | 2,152,400 | 903,000 | 6,837.18 | 20,497.50 | 0.07 | .026 | .045 | .019 | 73.2 |
| 30 | 160 | 14,552 | 73,400 | 1,733,600 | 682,000 | 1,875.37 | 17,633.00 | 0.07 | .027 | .046 | .019 | 70.4 |
| 31 | 160 | 15,749 | 121,200 | 2,183,800 | 979,000 | 3,096.66 | 19,685.50 | 0.07 | .0247 | .0447 | .02 | 81. |
| 32 | 160 | 17,328 | 159,900 | 2,436,100 | 950,000 | 4,085.45 | 24,452.00 | 0.07 | .0275 | .0451 | .0176 | 64. |
| Total | 3.567 | 217,431 | 8,870,262 | 40,966,040 | 12,613,500 | $227,082.22 | $302,741.90 | Aver. | $0.0212 | $0.0359 | $0.0148 | 74.8% |

Atlanta, G

Beloit, Wi
Brooklyn,

Buffalo, N

Camden, N

Chicago, I

Cleveland,
Columbus,

Dubuque,
Duluth, M
Grand Ra
Gary, Ind
Harrisbur
Helena, M
Lexington
Lawrence,
Louisville

Manhattar
(19

Manhattar
(19

Memphis,
Milwauke
Minneapol

Nashville,
Raleigh, N
Richmond,
Salt Lake
Schenecta
Springfiel
Ludlow, M
Superior,
Syracuse,

Toledo, O

Washingt

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | ........ | ........ | 30,148 | 5,197 | 8,633 | 132 | 1,009 | 14,971 | 9,113 | 10,852 | 388,568 | 5,360,821 | 5,749,389 |

## SUMMARY OF HOUSE TO HOUSE INSPECTION. WATER SURVEYS, CITY OF CHICAGO, 1909.

| District Number | No. of Subdivisions in District | Area in Acres | No. of Places Inspected | LEAKY FIXTURES DISCOVERED | | | | | Hopper Closets | Underground Leaks | LEAKAGE—GALLONS PER DAY | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Faucets | Closets | Baths | Misc'l | Total | | | Metered. | Unmetered. | Total. |
| Maplewood | ........ | ....... | 80 | 18 | 45 | ...... | 9 | 72 | 43 | 33 | ........ | 28,350 | 28,350 |
| Pullman | ........ | 2,100 | 93 | 10 | 13 | ...... | 2 | 25 | 8 | 9 | ........ | 7,740 | 7,740 |
| Englewood | ........ | 3,200 | 1,596 | 60 | 250 | 5 | 52 | 367 | ....... | 147 | 7,590 | 162,092 | 169,682 |
| Part of 2-B | 9 | 94 | 145 | 31 | 44 | ...... | 7 | 82 | 25 | 45 | 4,920 | 27,420 | 32,340 |
| Part of 2-C | 6 | 149 | 770 | 148 | 259 | 5 | 44 | 456 | 220 | 443 | 14,904 | 127,128 | 142,032 |
| Part of 2-D | 25 | 310 | 1,857 | 156 | 516 | 19 | 52 | 743 | 135 | 394 | 68,661 | 246,970 | 315,631 |
| 3 | 10 | 229 | 1,753 | 288 | 704 | 11 | 86 | 1,089 | 224 | 278 | 81,350 | 249,440 | 330,790 |
| 4 | 8 | 504 | 2,937 | 165 | 769 | 8 | 64 | 1,006 | 352 | 457 | 48,967 | 454,492 | 503,459 |
| 5 | 14 | 258 | 2,471 | 656 | 898 | 20 | 164 | 1,738 | 1,269 | 1,565 | 59,424 | 571,248 | 630,672 |
| 16 | 15 | 154 | 1,506 | 292 | 368 | 3 | 59 | 722 | 654 | 639 | 35,484 | 358,296 | 393,780 |
| 18 | 7 | 160 | 1,258 | 307 | 574 | 24 | 34 | 939 | ....... | 339 | 1,560 | 384,083 | 385,643 |
| 22 | 9 | 215 | 1,421 | 239 | 447 | 3 | 24 | 713 | ....... | 741 | 6,996 | 253,326 | 260,322 |
| 23 | 10 | 370 | 1,587 | 261 | 343 | 6 | 26 | 636 | ....... | 673 | 6,240 | 287,670 | 293,910 |
| 26 | 7 | 160 | 1,024 | 162 | 407 | 6 | 23 | 598 | 386 | 437 | 6,144 | 208,996 | 215,140 |
| 27 | 7 | 160 | 807 | 103 | 261 | 5 | 42 | 411 | 394 | 398 | 270 | 195,554 | 195,824 |
| 28 | 10 | 250 | 194 | 51 | 48 | ...... | 13 | 112 | 106 | 77 | 180 | 44,920 | 45,100 |
| 29 | 6 | 160 | 1,691 | 291 | 563 | 2 | 63 | 919 | 680 | 563 | 12,638 | 330,967 | 343,605 |
| 30 | 7 | 160 | 1,623 | 362 | 580 | 7 | 62 | 1,011 | 687 | 713 | 4,518 | 333,926 | 338,444 |
| 31 | 7 | 160 | 1,750 | 388 | 279 | ...... | 30 | 697 | 1,211 | 749 | 2,400 | 206,940 | 209,340 |
| 32 | 6 | 160 | 1,703 | 309 | 297 | 1 | 52 | 659 | 1,143 | 662 | 7,098 | 217,400 | 224,498 |
| 33 | 6 | 135 | 932 | 131 | 174 | 2 | 13 | 320 | 140 | 274 | 7,548 | 96,026 | 103,574 |
| 44 | 9 | 160 | 1,825 | 408 | 479 | 3 | 48 | 938 | 714 | 702 | 9,336 | 339,487 | 348,823 |
| 45 | 8 | 160 | 1,125 | 361 | 315 | 2 | 40 | 718 | 722 | 514 | 2,340 | 228,350 | 230,690 |
| Total | ........ | ....... | 30,148 | 5,197 | 8,633 | 132 | 1,009 | 14,971 | 9,113 | 10,852 | 388,568 | 5,360,821 | 5,749,389 |

## WATER WORKS SHOPS AND REPAIR DIVISION.

**Mr. F. A. Miller, Supt.**

During the year such work as was performed by this division was done on a regularly authorized requisition or order from the division or department of the City of Chicago requiring the services of the shops or the employes of this division.

A brief classification of the kind of work performed is as follows:

General machine shop, blacksmithing and brass foundry work; sheet metal shop work and the erection of the same, masonry and concrete work; carpentry and wood working, painting, slate, tile, tar and gravel roofing.

The employes of this division are certified by the Civil Service Commission from regular lists of mechanics of the various classes and the number of men employed varies according to the amount of work on hand.

Estimates of the cost of various repairs are made for the various divisions on request and bills for the work performed under the various orders or requisitions are submitted when the work is completed.

### SHOPS.

The general machine shop, located on Ashland avenue near 22nd street, in addition to performing necessary repair work on machine shop orders, is also engaged in manufacturing and assembling the standard make of fire hydrants and valves for use in the extension and repairs of the water pipe system of the City of Chicago. The following is a record of the hydrants and valves manufactured and repaired:

### HYDRANTS AND VALVES MANUFACTURED, 1909.

| | HYDRANTS | | | | | VALVES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single | 2¼ in. | Standard 4 in. | Frost 4 in. | 8 in. Bottom | 4 in. | 6 in. | 8 in. | 12 in. | 16 in. | 24 in. |
| On hand Jan. 1, 1909 | 12 | 17 | 14 | 0 | 0 | .... | 52 | 69 | 23 | 0 | 1 |
| Manufactured | ........ | 1,059 | 24 | 2 | 44 | 190 | 239 | 87 | 53 | 1 | 0 |
| Total | 12 | 1,076 | 38 | 2 | 44 | 190 | 291 | 156 | 76 | 1 | 1 |
| Shipped, 1909 | 2 | 1,050 | 28 | 1 | 44 | 149 | 245 | 88 | 17 | 0 | 0 |
| On hand Dec. 31, 1909 | 10 | 26 | 10 | 1 | ........ | 41 | 46 | 68 | 59 | 1 | 1 |

### HYDRANTS AND VALVES REPAIRED DURING 1909.

| HYDRANTS | | | | VALVES | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Single | 2¼ in. | 3¼ in. | 4 in. | 4 in. | 6 in. | 8 in. | 12 in. | 16 in. | 24 in. |
| 68 | 700 | 1 | 67 | 0 | 2 | 0 | 1 | 0 | 1 |

The shop at 14th street and Indiana avenue contains light-wood working machinery and general sheet metal working machinery, and is arranged to facilitate the handling of work of this character.

The following tables show the totals of the work done for the various divisions and departments and the amount of the bills for each class of work.

## WATER FUND CONSTRUCTION CONTRACTS IN FORCE DURING 1909.

| WORK | CONTRACTOR | Date of Contract | Total amount of contract including extras if any | Contract Completed | Gross Vouchered to Dec. 31, 1909 | REMARKS |
|---|---|---|---|---|---|---|
| Centrifugal Pumping engines for 39th St. Pumping Station.... | Allis-Chalmers Co.. | Mar. 24, 1902 | $ 204,608.69 | Dec. 26, 1907 | $ 204,608.69 | Reserve Paid in 1909 |
| Three 25,000,000 gallon triple expansion pumping engines at Chicago Av. Pumping Station ........ | Allis-Chalmers Co.. | Oct. 13, 1902 | 314,220.00 | Aug. 23, 1907 | 314,220.00 | Reserve Paid in 1909 |
| Sluice gates, machinery for their operation and steel structure for their support at Lawrence Av. Pumping Station.... | Allis-Chalmers Co.. | Dec. 14, 1905 | 11,699.48 | Nov. 8, 1907 | 11,699.48 | Reserve Paid in 1909 |
| One 25,000,000 gallon triple expansion engine and one traveling crane at Lake-View Pumping Station ............... | Allis-Chalmers Co.. | Jan. 22, 1907 | 124,700.00 | Sept. 8, 1909 | 93,525.00 | Reserve to be paid in 1911 |
| Two 25,000,000 gallon vertical triple expansion engines and one electric crane for Roseland Pumping-Station ............ | Allis-Chalmers Co.. | Sept. 8, 1909 | 259,900.00 | ............ | .......... | No payments made |
| Four pumping engines for Lawrence Ave. Pumping Station ............. | Allis-Chalmers Co.. | July 13, 1905 | 127,900.00 | July 27, 1908 | 121,505.00 | Reserve to be paid in 1910 |
| Foundations for addition to building and foundations for new engines at Lake View Pumping Station.... | Am. Eng. & Const.Co. | July 19, 1907 | 95,100.00 | July 30, 1908 | 95,100.00 | Reserve and extras paid in 1909 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Remodeling interior of Chicago Ave. Pumping Station......... | E. M. Bent......... | Feb. 11, 1908 | 18,845.82 | Aug. 3, 1909 | 17,903.53 | Reserve to be paid in 1910 |
| Sluice gates and valves for Blue Island Ave. Land Tunnel ...... | Coffin Valve Co..... | May 29, 1908 | 17,309.30 | Mar. 25, 1909 | 17,309.30 | |
| Paving, grading, curbing, catchbasins, etc., in Ashland Ave.... | R. F. Conway Co... | Nov. 18, 1907 | 7,232.36 | June 4, 1909 | 7,232.36 | |
| Paving in Lawrence Avenue ........... | R. F. Conway Co... | July 1, 1909 | 2,886.50 | Oct. 17, 1909 | 2,886.50 | |
| Cast Iron Floors, etc., at Lawrence Avenue Pumping Station.... | T. A. Cummings Foundry Co ...... | Mar. 21, 1908 | 4,638.00 | Dec. 2, 1908 | 4,638.00 | Reserve paid in 1909 |
| Fish Screens, cast wedges, etc., at Springfield Avenue Pumping Station and Central Park Avenue Pumping Station... | T. A. Cummings Foundry Co ....... | Aug. 14, 1908 | 4,794.00 | Feb. 1, 1909 | 4,794.00 | |
| Cleaning Lawrence Avenue Conduit.... | John P. Dougherty.. | Mar. 2, 1909 | 11,705.12 | July 16, 1909 | 11,119.87 | $585.25 reserve due in 1910 |
| Manhole in 39th St. Intercepting Sewer... | Edward H. Duffy... | Oct. 11, 1909 | 999.00 | not compl'ted | 798.04 | |
| Connecting Blue Island Avenue Land Tunnel with Pumping Stations. ............. | Empire Construction Company ......... | April 2, 1909 | 15,544.69 | ............ | 13,071.00 | |
| Removing obstruction to navigation (caused by water tunnel) in Lake Michigan .... | The FitzSimons & Connell Co. ...... | Oct. 13, 1909 | 2,250.00 | ............ | 1,275.00 | |
| Engines & Generators for 39th St. Pumping Station & Lawrence Ave. Pumping Station ............ | Gindele Bros. & Co.. | April 10, 1908 | 7,890.00 | Sept. 27, 1909 | 7,890.00 | |
| Two (2) filters at Rogers Park Pumping Station ............ | Gindele Bros. & Co. | Aug. 2, 1909 | 4,725.00 | ............ | 3,543.75 | |

## WATER FUND CONSTRUCTION CONTRACTS IN FORCE DURING 1909.—(Continued)

| WORK. | CONTRACTOR. | Date of Contract. | Total amount of contract including extras if any. | Contract Completed. | Gross Vouchered to Dec. 31, 1909. | REMARKS. |
|---|---|---|---|---|---|---|
| Building an addition to protection pier at 39th Street ........ | Great Lakes Dredge & Dock Co........ | Aug. 4, 1908 | $ 14,013.13 | Mar. 25, 1909 | $ 14,013.13 | |
| Intake protection pier and shaft for Lawrence Ave Conduit. | Great Lakes Dredge & Dock Co ...... | Sept. 14, 1905 | 94,890.00 | Nov. 18, 1909 | 94,890.00 | 5% Reserve due in 1910. |
| Gallery at 39th Street Pumping Station... | Joseph Halsted Co... | Oct. 7, 1908 | 890.00 | Aug. 31, 1909 | 890.00 | |
| Sec. No. 1 New Southwest Land and Lake Tunnel ............ | Joseph Hanreddy... | April 9, 1906 | unit prices | Mar. 31, 1909 | 603,494.14 | |
| Constructing a lateral sewer connection in Lawrence avenue.... | William F. Healy... | May 6, 1908 | 3,860.00 | July 1, 1909 | 3,860.00 | |
| Concrete invert sewer for intercepting sewer................ | William F. Healy... | June 2, 1908 | 3,485.50 | Sept. 18, 1908 | 3,485.50 | 5% Reserve paid in 1909. |
| Inspecting two 40,000,000 gallon pumping engines built by H. R. Worthington...... | Robert W. Hunt & Co .............. | April 7, 1905 | 4,462.50 | Sept. 8, 1909 | 4,462.50 | |
| Inspection of new engines built for 39th St. Pumping Station. | Robt. W. Hunt & Co. | Nov. 30, 1903 | 2,607.89 | Sept. 10, 1909 | 2,607.89 | |
| Addition to Blue Island Ave. Land Tunnel.. | Geo. W. Jackson & Co. ............... | July 14, 1908 | unit prices | Mar. 4, 1909 | 5,784.24 | |
| Sec. No. 3 New Southwest Land and Lake Tunnel ............ | Geo. W. Jackson & Co. | Feb. 19, 1907 | unit prices | ............ | 1,264,297.02 | |
| Coal handling plant for 39th Street Pumping Station ............ | Jeffrey Mfg. Co...... | May 24, 1906 | 20,227.88 | Aug. 12, 1909 | 20,227.88 | 5% Reserve to be paid in 1910. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Coal and ash handling plant at Lawrence Ave. Pumping Station ................ | Link Belt Company. | Sept. 23, 1909 | 7,971.00 | ............ | 3,188.40 | |
| Building uncompleted tunnel for intercepting sewers (previous contract by J. P. Agnew) ............ | M. H. McGovern Co. | Sept. 6, 1907 | 254,003.40 | Dec. 31, 1908 | 254,003.40 | Payments include appraised value of plant turned over to city. |
| Cleaning out Lawrence Avenue Conduit .... | M. H. McGovern Co. | Dec. 31, 1908 | 3,655.54 | May 25, 1909 | 3,655.54 | |
| Exhaust lines including covering for Lawrence Ave. Pumping Station ............ | August Wilson ..... | Oct. 7, 1908 | 1,444.00 | Mar. 5, 1909 | 1,444.00 | |
| Two boilers and three steam purifiers for Springfield Ave. Pumping Station.... | John G. O'Neil..... | Jan. 16, 1907 | 32,999.10 | May 12, 1908 | 32,999.10 | 5% Reserve paid in 1909. |
| Foundations for boiler-room and buildings and chimney at Roseland Pumping Station ................ | Parker Washington Co. .............. | Sept 10, 1909 | unit prices | ............ | 12,866.96 | |
| Pavement around Roseland Pumping Station ............ | Parker Washington Co. . ............ | April 10, 1909 | 2,125.00 | Dec. 31, 1909 | 2,125.00 | |
| Labor, material, etc., to build pump pit, suction well, etc., and foundations for Roseland Pumping Station ............ | Parker Washington Co. .............. | Nov. 5, 1908 | unit prices | ............ | 46,904.45 | |
| Sect. 2 new Southwest Land and Lake Tunnel ................ | Parker Washington Co. ............... | July 2, 1906 | 826,903.19 | Feb. 10,1909 | 826,903.19 | |
| Repairs to coal handling plant and erection of roof over coal storage house.. | Paschen Bros....... | Nov. 26, 1909 | 1,367.00 | ............ | ........... | |

## WATER FUND CONSTRUCTION CONTRACTS IN FORCE DURING 1909.—(Continued)

| WORK. | CONTRACTOR. | Date of Contract. | Total amount of contract including extras if any. | Contract Completed. | Gross Vouchered to Dec. 31, 1909. | REMARKS. |
|---|---|---|---|---|---|---|
| Steam heating plant at Lake View Pumping Station ............ | Phillips, Getschow & Co. .............. | Oct. 28, 1909 | $2,269.00 | Dec. 20, 1909 | $2,269.00 | 5% to be paid in 1910. |
| Inspection and tests of centrifugal screw pump at Lawrence Ave. Pumping Station ................ | Pittsburg Test Laboratory, Ltd...... | Nov. 28, 1905 | 2,558.00 | ............ | 2,558.00 | Reserve being held for adjustment. |
| Screen well and screens in alley east of Lawrence Ave. Pumping Station ............. | T. J. Prendergast... | Aug. 16, 1909 | 1,125.00 | ............ | 1,012.50 | |
| Finishing incomplete contract for Lawrence Ave. Pumping Station (Agnew contract) ............ | James W. Redmond.. | Sept. 6, 1907 | 12,176.97 | Nov. 18, 1908 | 12,176.97 | 5% Reserve paid in 1909. |
| Horizontal nut and hydraulic gate valves for Lake View Pumping station ......... | Rensselaer Mfg. Co. | April 22, 1909 | 2,840.00 | Sep. 8, 1908 | 2,840.00 | 5% reserve to be paid in 1910. |
| Iron fence at 39th St. Pumping Station ... | F. P. Smith Wire and Iron Works ...... | Oct. 1, 1908 | 761.00 | Dec. 31, 1908 | 761.00 | 5% reserve paid in 1909. |
| Iron platform ladders, railings, etc., in boiler room and structural iron flagpole bracket with flagpole at Lawrence Ave. Pumping Station.... | Southwestern Architectural Iron Wks. | Aug. 17, 1909 | 834.00 | Dec. 31, 1909 | 834.00 | |
| Engines at 68th St. Pumping Station ... | Snow Steam Pump Works. .......... | Mar. 9, 1905 | 39,844.00 | May 28, 1908 | 39,844.00 | 10% paid in 1909. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Relief sewer connection and repairs to bulkheads and outfall sewer at Todd Street ............. | Star Construction Company. . ....... | Oct. 20, 1909<br>Additional | 1,459.00<br>6 feet. | Dec. 29, 1909 | 1,636.00 | 5% reserve to be paid in 1910. |
| Plumbing, drainage gas fitting and heating work at Roseland Pumping Station.... | Carl John Stein..... | Dec. 8, 1909 | 10,600.00 | ........... | ............ | |
| Steam heating apparatus complete in Lawrence Ave. Pumping Station.... | William Sullivan.... | Dec. 31, 1907 | 1,679.68 | July 22, 1908 | 1,679.68 | 5% reserve paid in 1909. |
| Superstructure of Roseland Pumping Station ............ | The Warner Construction Company | Dec. 6, 1909 | 229,864.00 | ........... | ............ | |
| Concrete hopper bottom, etc., at Lawrence Ave. Pumping Station ............ | The Warner Construction Company | Oct. 18, 1909 | 1,440.00 | Dec. 20, 1909 | 1,440.00 | 5% to be paid in 1910. |
| Roof and light tower on Lawrence Ave. crib .............. | The Warner Construction Company | July 1, 1909 | 7,061.00 | ........... | 4,236.60 | |
| Two triple expansion pumping engines at Springfield and Central Park Ave. Pumping Stations ....... | Henry R. Worthington............. | Dec. 13, 1904 | 178,500.00 | Nov. 24, 1908 | 178,500.00 | 10% reserve to be paid in 1910. |
| Addition to Lake View Pumping Station .... | B. M. Zadeck Co..... | Sep. 18, 1907 | 93,748.75 | Feb. 16, 1907 | 93,748.75 | Reserve, etc., paid in 1909. |

## DIVISION OF CONSTRUCTION.

MR. H. W. CLAUSEN, ASSISTANT ENGINEER.

The supervision of all intercepting sewer work was carried on as a separate Division until the first day of October, 1909. For the remainder of the year the work was supervised by the Construction Division. This report covers the work of both Divisions for the entire year.

### CHICAGO AVENUE PUMPING STATION.

COMPLETION OF THE INTERIOR FINISH OF THE BASEMENT AND ENGINE PIT.—E. M. BENT, CONTRACTOR. The marbleite facing of the engine pit walls was completed during the year 1908, but owing to dampness and leakage through the concrete lining several large patches of the marbleite finish became discolored and dropped off. March 30, 1909, the City undertook to prepare the concrete walls behind the defective places. This was accomplished by keeping the slabs from direct contact with the moisture and by providing ventilation behind the same. At such points as the walls were found to be damp only vertical furrows 1½-inch deep and 1½-inch wide were cut in the concrete, and the marbleite slabs were laid over the furrows in the usual manner. Ventilation was provided for by leaving a number of openings in the joints between the slabs. At points where there was considerable leakage the entire face of the walls was cut away for a depth of about two inches, and halves of 4-inch book tile were fastened to the wall by means of copper wires securely anchored into the concrete. The marbleite was then placed over the tile in the usual manner.

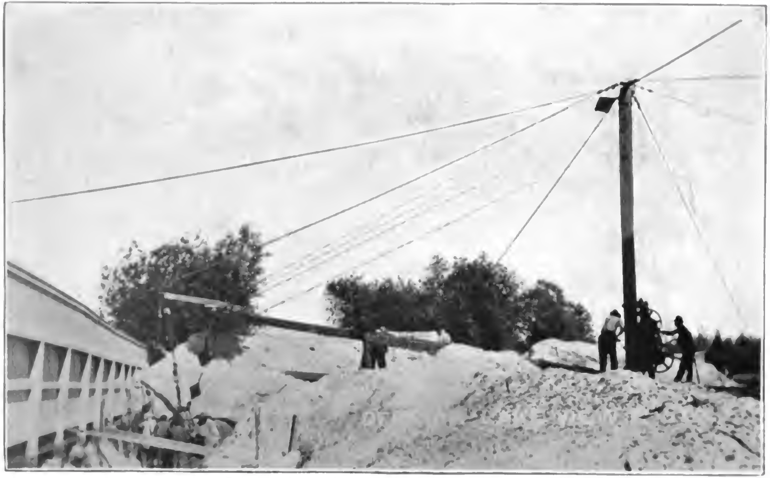
For the low retaining way between the two levels of the engine pit the repairs were made by plastering the same with a composition composed of white cement and sand. Joints were struck to resemble those between the marbelite slabs. All of the work was completed by August 20, 1909.

Mr. E. P. Scott, Assistant Engineer, was in local charge of this work.

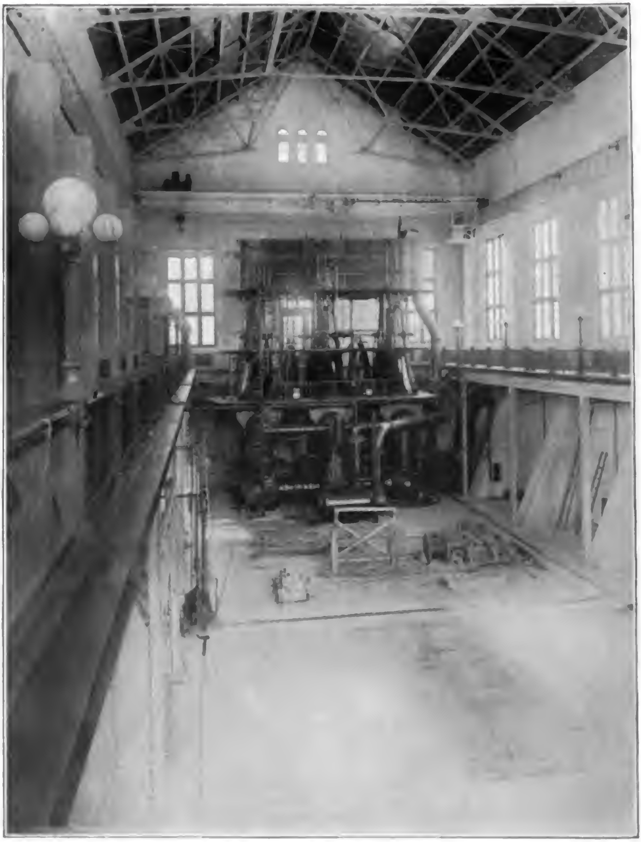
### LAKE VIEW PUMPING STATION.

SUPERSTRUCTURE FOR NEW ENGINE HOUSE AND CONNECTING BUILDING.—By the close of the year 1908 work on the new building had neared completion. The work on the new building completed during the year was as follows:

Sheet metal work comprising the downspout connections to the sewer; copper ventilating pipes for the toilet rooms, and fitting up of the damper chains for the ventilators, etc. Finished the plastering of the walls of the connecting building. Connected the concrete arches for the floor of the engine room gallery. Laid the mosaic tile floors on the galleries and in the connecting building. Completed all carpentry work. Finished setting the marble for the lavatory and toilet rooms. Completed all glazing of windows and doors. Placed the ornamental iron work, cast iron facia, railing and posts for engine room galleries, brass thresholds at all doorways, stairways to basement and to the second floors of connecting building. Assembled and installed all steel lockers, etc. Completed the plumbing, drainage and gas fitting. Official



Boom Derrick Used at Lake View Station



VERTICAL, TRIPLE EXPANSION, CRANK AND FLY-WHEEL PUMPING ENGINE.
ERECTED DURING 1909 AT LAKE VIEW PUMPING STATION
BY ALLIS-CHALMERS COMPANY. CAPACITY
25 MILLION GALLONS PER 24 HOURS

inspection of plumbing was made on February 24th. Painted all wood work, structural and ornamental iron work, walls and ceilings of the first floor rooms of the connecting building; varnished and finished the wood work and the office floor. Placed cast iron electric light lamp stands on all gallery railing posts. Furnished cast lamp brackets for electric lights over the north and south entrances to the building. The B. M. Zadeck Company rebuilt the cement steps for north areaway to the basement of connecting building. The B. M. Zadeck Company finished their work by July 29, 1909.

TUNNELS AND GATE SHAFTS.—American Engineering and Construction Company, contractor. Work on the two 5-foot tunnels was begun by this contractor during the latter part of 1908, and the last section of the 12-inch brick lining was completed by June 5, 1909. The bottom of both 5-foot tunnels and the 6-foot eye formed in the wall opposite the same are at an elevation of 28 feet below datum. The two 5-foot drifts run level from the gate shaft to their connection with the suction wells inside of the new building. The average length mined in each drift was 9 feet per day. The length of the north drift from the centre of the gate shaft to the centre of the suction well is 55 feet 6 inches, while the corresponding measurement for the south drift is 79 feet 10 inches. The character of ground was uniformly soft blue clay and was removed with knives.

On January 9th the two 5-foot sluice gates were lowered into the shaft and bolted to the 2-foot 6-inch cylindrical thimbles, which had been built into the concrete lining at the tunnel openings. Guides for the gate stems were set at —4.3 and at —12.5 feet C. D.

NEW TWENTY-FIVE MILLION GALLON PUMPING ENGINE.—The erection of the new pump begun by the Allis-Chalmers Co. was continued and was operated for the first time on August 18th. From August 21st to November 9th it was kept in operation ten hours per day, with the exception of six days in October, during which time it was shut down while work on the steel lagging and the wiring for the electric lights were in progress. From November 9th to November 26th the engine was operated daily for 24 hours. For the balance of the year the engine was in the hands of the painters.

STEAM HEATING SYSTEM FOR NEW ENGINE HOUSE AND CONNECTING BUILDING.—This contract was awarded to Phillips-Getschow Company October 28, 1909. The piping was started on November 10th and by December 11th ten of the gallery radiators and six in the connecting building were placed in service. At the close of the year all piping had been completed, and the remaining radiators were connected up and ready for use.

SIX FOOT TUNNEL CONNECTION TO OLD SHORE SHAFT.—This connection was built by City day labor and was started March 29th and completed August 13th, 1909.

A circular wooden platform suspended by four 2-inch rods was lowered into the shaft to a point 7 feet below the bottom of the tunnel connection. A sectional half-round timber bulkhead, provided with a heavy oakum roll, was secured to the platform and caulked against the face of the wall of the shaft over the proposed opening. The shaft above the platform was filled with clay. After completing the lining of the tunnel to the wall of the old shaft, the exposed outer ring and a portion of the second ring had been cut out when a leakage from the shaft prevented the completion of the work from this side. The tunnel and gate shaft were allowed to fill with water. The clay and bulkhead were removed from the old shaft, and the balance of the shaft wall for the tunnel opening was shot out by using light charges of dynamite, which were placed in position by a diver. The average diameter of this opening is 5 feet 9 inches. This connection measures 29 feet 6 inches from centre to centre of shafts, and was built on a radius of 24 feet, the centre of the tunnel being 25 feet below datum. Diameter of bore was 8 feet.

Lining is 12 inches thick, plastered with waterproof mortar. Ground, soft blue clay, was removed with knives. The gate shaft is located 14 feet east of the new building and the old shore shaft 41 feet 4 inches east of same. Both shafts are situated about opposite the centre of the building.

WIRING OF THE NEW ENGINE HOUSE.—The City Electrical Department started the wiring of the new engine house and connecting building on December 18, 1908. The work done during 1909 consisted of the installing of all conduits and wires for the electric lights of the new engine house galleries, walls of the pump pit, new pumping engine and the basement of connecting building. Conduits and wires have been provided for the 220 volt 25 ton crane from the switchboard located under the west gallery to the trolley wires in the northeast corner of the building. The electric light fixtures on the engine house gallery railing and for the room of the connecting building were placed.

On December 31, 1909, 75 per cent of the work outlined for the new building was completed.

## SOUTHWEST LAND AND LAKE TUNNEL.

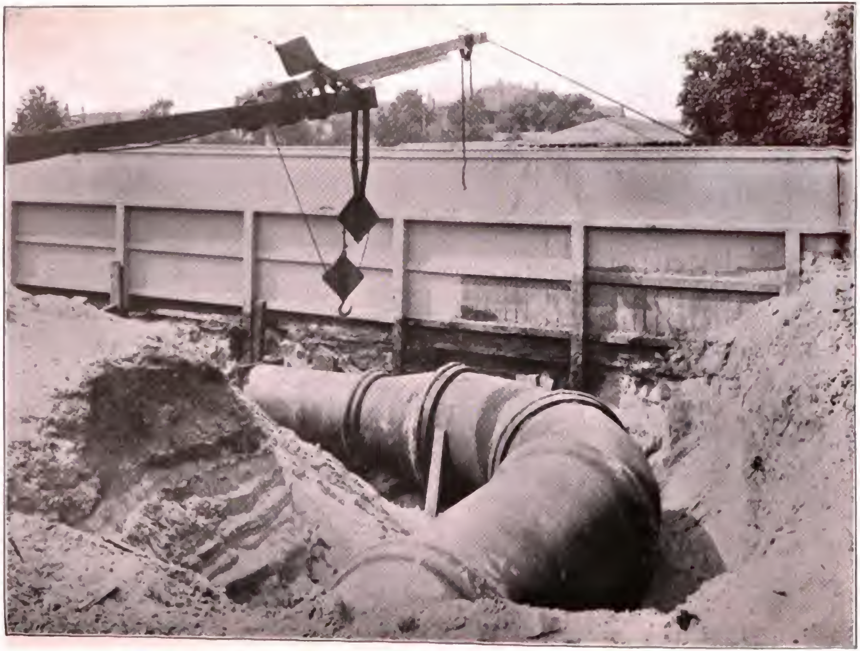
MR. GEORGE F. SAMUEL, ASSISTANT ENGINEER, IN CHARGE.

SECTION 1.—The tunnel built under this contract lies under State street from 74th to 104th streets, and under 104th street from State street to Stewart avenue. The contract was let April 9, 1906, to Joseph Hanreddy. Work on this contract was started April 13, 1906, and completed April 30, 1909. The contract amounted to $603,494.14. The contract included the construction of 22,366.3 feet of 9-foot tunnel, three permanent shafts, and one temporary shaft.

The excavation of this section was completed previous to January 1, 1909, and the lining of the drifts was partially completed. The work done in 1909, in order to complete the tunnel consisted of lining 10,448.3 feet of arch and side walls and 15,545.3 feet of invert.

The maps and tables attached show the location and length of the drifts on this section, and the monthly progress made in excavating and lining for the whole period during which construction was being carried on. All excavation was made in limestone rock.

48-inch Hydraulic Valve, Lake View Pumping Station



END OF 48-INCH HEADER SHOWING BENDS AT LAKE VIEW PUMPING STATION

Setting 36-inch Hydraulic Valve at Lake View Pumping Station

SECTION 3.—GEORGE W. JACKSON, INC., CONTRACTOR. This section of the tunnel is 14 feet in diameter and extends from 73rd street and Yates avenue to the Edward F. Dunne Crib, located in Lake Michigan, adjoining the Sixty-eighth Street Crib. The total length of the section is about 12,136 feet.

The progress of the work at the different shafts and drifts during 1909 was as follows:

EDWARD F. DUNNE CRIB.—The contractor began work in January, 1909, by pumping the water out of the well, and prepared to sink the west shaft. After almost cutting through six timbers of the fifth or top course of the floor of the well an upward pressure of the water caused the floor timbers to bulge upward to the extent of several inches, and the timbers were broken by the strain. The water from the Lake filled the well through the break in the floor, and the sinking of the shaft had to be temporarily abandoned. When the work was resumed in March, it was found impracticable to pump the water out of the well, and preparations were made to cut the holes for the two shafts through the 4-foot 4-inch timber floor of the well, while the same was under water. This was accomplished by drilling a ring of holes, each about 3 inches in diameter, on the circumference of the circular hole required to allow the shaft to pass through the floor timbers. The holes were drilled by means of the following arrangement:

Two structural steel beams were arranged in the form of a cross with arms of equal length set at an angle of 90 degrees. The centre point of the cross beams was arranged as a pivot and was set under water on the floor of the well with the pivot point on the centre of the diameter of the core to be removed. Four heavy steel pipes were set in a vertical position and securely fastened to the end of each cross arm. A second set of cross arms was built in the same manner as above and was securely fastened to the vertical pipe uprights in a horizontal position at a point equal to about half of the depth of the water. A third set of arms was placed at a point above the surface of the water and they were also fastened to the vertical pipe. A rock drill was set on one of the arms and the vertical pipe of the arm was used as a guide for the cutting tool. When it was necessary to change the location of the cutting tool the entire frame work was revolved on the centre pivot. This method of cutting out the core was satisfactory, and the core for the west shaft was removed about May 15th. The core for the east shaft was removed in June.

The sinking of the west shaft was started about May 15th. The contractor had previously asked and obtained permission to sink a steel shell down to the rock with the intention of carrying up the concrete lining of the shaft from the surface of the rock to —59.5 feet C. D., and then set the cast iron shell on the concrete at this elevation. The steel shell was sunk 8 feet into the lake bottom and could not be sunk lower than that point. The attempt to sink the steel shell delayed the work, and it was finally abandoned. The steel shell was then filled with sand up to the level of the lake, and the cast iron shell was erected on the sand

and was sunk by excavating the sand from within the shell. By September the cutting edge of the cast iron shaft had been sunk to —54.0 feet C. D. No further work was done on this shaft during the remainder of the year.

On the east shaft no attempt was made to sink the steel shell. After it was erected in place on the bottom of the Lake it was filled with sand. The cast iron shaft was then erected on the sand and sunk by removing the sand in the same manner as it was done on the west shaft. By December 31, 1909, the cutting edge of the east shaft was sunk to —37.0 feet C. D.

INTERMEDIATE CRIB.—After this Crib was erected and the working shaft had been sunk, the contractor fitted out a part of the second floor of the structure for use as a dining room and kitchen and another part as sleeping quarters for the accommodation of his employes. During such times as mining was being carried on continuously in the two drifts from the Intermediate shaft about one hundred men were employed on the work. The contractor had installed an aerial tramway (described on page 79 of Report of 1907) between the shaft and the shore, and the men were transferred back and forth from the shore to the crib in special tramway cars that had been built for the purpose, or on the steam tugs that were used to tend the cribs.

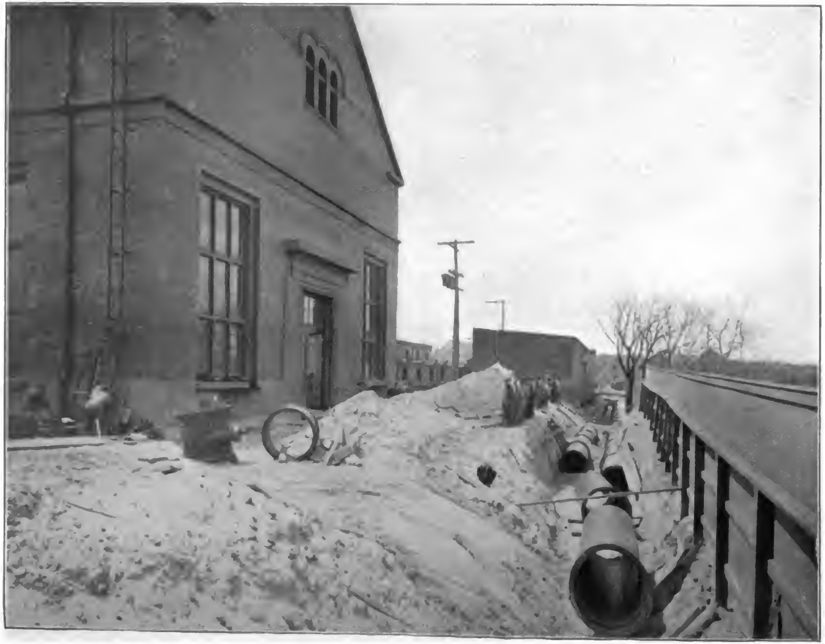
Before the west drift from the Intermediate Crib and the east drift from the shore shaft were connected, the contractor housed and boarded his men at the crib during the fall and winter months, so as to provide against the uncertainty of landing men at the crib during the storm period or during the times that the Lake was covered with ice.

Mining in both drifts was carried on continuously from January 1st to January 20, 1909.

At about 8 o'clock on the morning of January 20th, 1909, the crib was the scene of an appalling and disastrous fire which resulted in the loss of the lives of sixty workmen who were on the crib at the time. The cause and exact point of origin of the fire were not determined with certainty at the inquest which was held subsequently, but it was found that the fire developed with great rapidity and had shortly enveloped the entire structure.

A number of workmen saved their lives by jumping overboard into the Lake and by then reaching large cakes of floating ice or by reaching a muck pile, the surface of which at that time extended above the level of the water in the Lake. Those who reached the cakes of floating ice or muck pile were soon rescued by the crew of the tug "Morford." The tug was employed by the contractor to tend to the permanent and intermediate crib and at the time the fire occurred it was moored at the permanent crib, about 3,500 feet from the intermediate crib. Some of the men who reached the water were drowned before they could be rescued.

The fire was discovered at a time when all of the workmen were out of the drifts and the last driller's shot had been fired. Most of the



Two 36-inch Discharge Pipes, North Side Lake View Pumping Station workmen were on the second floor at the time, as the shifts were changing, and some of the men were dressing to go into the drifts and others were undressing after coming out.

At the time of the fire about 200 pounds of dynamite was stored in a powder room on the first floor of the structure, and it probably burned without exploding, as none of the eye witnesses heard or saw an explosion, and the condition of the structure after the fire did not indicate that an explosion had taken place.

The work of rebuilding the structure was started in March and was practically completed in June.

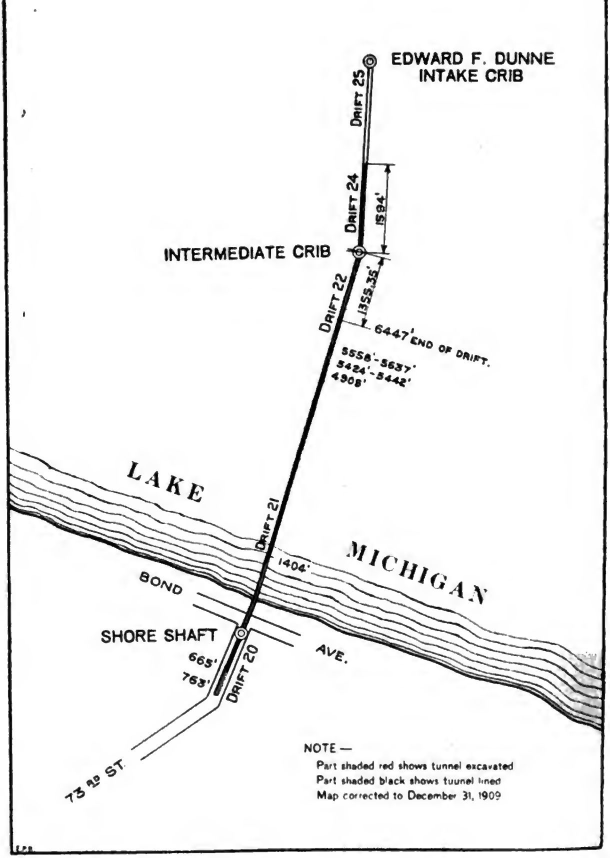
The house was rebuilt of the same general dimensions as the first building. The outer walls were rebuilt of 12x12-inch timbers to the roof, and the second floor and roof were made of 4-inch crib work formed of 2x4-inch lumber, which was laid on edge. The lower floor was covered with concrete, and the wood work of all of the walls and ceilings was covered with fireproof asbestos boards. A boat platform and lake boats were placed on the outside of the crib on an elevation with the second floor. The workmen were not housed at the crib following the fire. The tunnels from the shore to the crib were connected on October 16th.

Tables of the work done on each drift are made a part of this report.

MAP OF

SECTION 3, SOUTHWEST LAND AND LAKE TUNNEL

CHICAGO



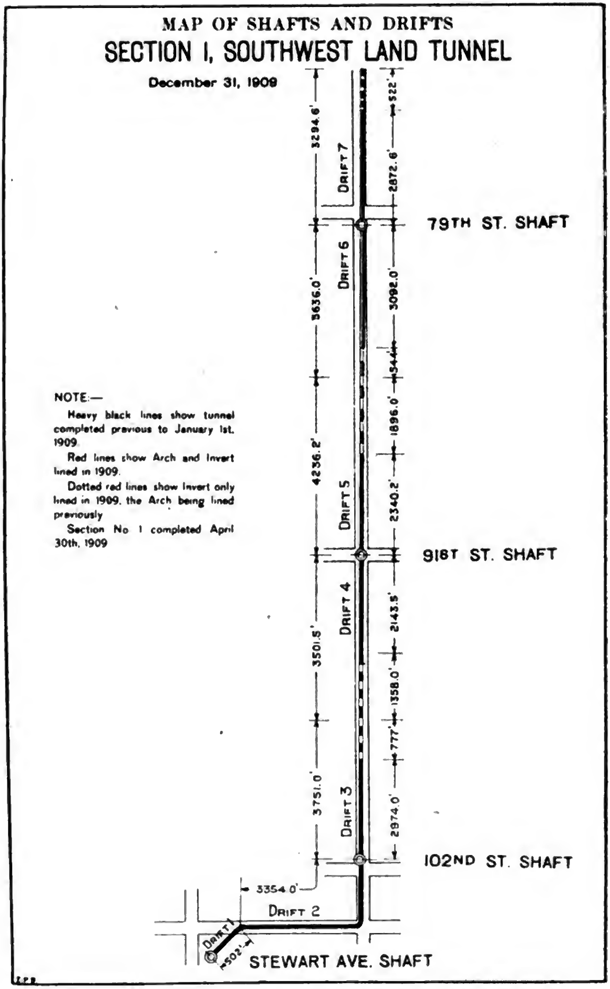
NOTE —
Part shaded red shows tunnel excavated
Part shaded black shows tuunel lined
Map corrected to December 31, 1909

## LINEAL FEET OF TUNNEL LINED—SECTION 3, SOUTHWEST LAND AND LAKE TUNNEL.

| DATE | DRIFT 20 | | DRIFT 21 | | DRIFT 22 | | DRIFT 24 | | DRIFT 25 | | ALL DRIFTS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert |
| 1908—January | 16 | 16 | 16 | 16 | | | | | | | 32 | 32 |
| February | | | | | | | | | | | | |
| March | | | | | | | | | | | | |
| April | | | | | | | | | | | | |
| May | | | | | | | | | | | | |
| June | | | | | | | | | | | | |
| July | | | | | | | | | | | | |
| August | | | | | | | | | | | | |
| September | | | | | | | | | | | | |
| October | | | | | | | | | | | | |
| November | | | | | | | | | | | | |
| December | | | | | | | | | | | | |
| 1908 | 16 | 16 | 16 | 16 | | | | | | | 32 | 32 |
| 1909—January | | | | | | | | | | | | |
| February | | | | | | | | | | | | |
| March | 309 | | | | | | | | | | 309 | |
| April | 340 | 649 | 147 | | | | | | | | 487 | 649 |
| May | | | 849 | | | | | | | | 849 | |
| June | | | 889 | | | | | | | | 889 | |
| July | | | 434 | | | | | | | | 434 | |
| August | | | | | | | | | | | | |
| September | | | | | | | | | | | | |
| October | | | 789 | | | | | | | | 789 | |
| November | | | 493 | | | | | | | | 493 | |
| December | | | | | | | | | | | | |
| 1909 | 649 | 649 | 3,601 | | | | | | | | 4,250 | 649 |
| 1908 | 16 | 16 | 16 | 16 | | | | | | | 32 | 32 |
| Total | 665 | 665 | 3,617 | 16 | | | | | | | 4,282 | 681 |

## MONTHLY PROGRESS—SECTION 3—SOUTHWEST LAND AND LAKE TUNNEL.

| Date | SHAFTS | | | | | | | | | | | LINEAL FEET OF DRIFTS EXCAVATED | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Shore | | Intermediate Crib | | | Outer Crib | | | | All Shafts | | Drift No. 30 | | Drift No. 21 | | Drift No. 22 | | Drift No. 24 | | Drift No. 25 | | All Drifts | |
| | Lineal Ft. | | Lineal Feet | | | Lineal Feet | | | | Lineal Ft. | | Lineal Ft. | | Lineal Ft. | | Lineal Ft. | | Lineal Ft. | | Lineal Ft. | | Lineal Ft. | |
| | Excav. | Lined | Crib Built | Shaft Ex. | Shaft L'd | Crib Built | Shaft Ex. | | Shaft L'd | Excav. | Lined | Per Month | Total | Per Month | Total | Per Month | Total | Per Month | Total | Per Month | Total | Per Month | Total |
| 1907 | | | | | | | | | | | | | | | | | | | | | | | |
| March | | | | | | | | | | | | | | | | | | | | | | | |
| April | | | 3 | | | | | | | | | | | | | | | | | | | | |
| May | 21 | | 23 | | | | | | | 24 | | | | | | | | | | | | | |
| June | 36 | | 19 | | | | | | | 36 | | | | | | | | | | | | | |
| July | 3 | | | | | | | | | 3 | | | | | | | | | | | | | |
| August | | | | | | 1 | | | | | | | | | | | | | | | | | |
| September | | | | | | 3.3 | | | | | | | | | | | | | | | | | |
| October | | | 22 | | | 2 | | | | | | | | | | | | | | | | | |
| November | 49 | | | | | | | | | 49 | | | | | | | | | | | | | |
| December | 39 | | | | | | | | | 39 | | 27 | 27 | 32 | 32 | | | | | | | 59 | 59 |
| 1907 | 151 | | 67 | | | 6.3 | | | | 151 | | | 27 | | 32 | | | | | | | | 59 |
| 1908 | | | | | | | | | | | | | | | | | | | | | | | |
| January | Completed | | Completed | | | | | | | | | 87 | 114 | 93 | 125 | | | | | | | 180 | 239 |
| February | | 143 | | | | 2 | | | | | 143 | | 114 | | 125 | | | | | | | | 239 |
| March | | | | 9 | | 8 | | | | 9 | | | 114 | | 125 | | | | | | | | 239 |
| April | | | | 6 | | 7 | | | | 6 | | | 114 | | 125 | | | | | | | | 239 |
| May | | | | 31 | | 2 | | | | 31 | | | 114 | | 125 | | | | | | | | 239 |
| June | | | | | | 14 | | | | | | 14 | 128 | 390 | 515 | | | | | | | 404 | 643 |
| July | | | | | | | | | | | | 215 | 343 | 310 | 825 | | | | | | | 525 | 1,168 |
| August | | | | 8.5 | 79 | | | | | 8.5 | 79 | 208 | 551 | 416 | 1,241 | | | | | | | 624 | 1,792 |
| September | | | | 62.5 | | 3 | | | | 62.5 | | 190 | 741 | 342 | 1,583 | | | | | | | 532 | 2,324 |
| October | | | | 15 | | 2.5 | | | | 15 | | 22 | 763 | 404 | 1,987 | 86 | 86 | 95 | 95 | | | 607 | 2,931 |
| November | | | | | | 2.5 | | | | | | | 763 | 384 | 2,371 | 74 | 160 | 44 | 139 | | | 502 | 3,433 |
| December | | | | | | | | | | | | | 763 | 389 | 2,760 | 149 | 309 | 4 | 143 | | | 542 | 3,975 |
| 1908 | | 143 | | 132 | 79 | 41 | | | | 132 | 222 | 736 | | 2,728 | | 309 | | 143 | | | | 3,916 | |
| 1909 | | | | | | | | | | | | | | | | | | | | | | | |
| January | | | | Completed | | | W. Shaft | E. Shaft | | | | | | 252 | 3,012 | 77 | 386 | 132 | 275 | | | 461 | 4,436 |
| February | | | | | | | | | | | | | | 299 | 3,311 | | | | | | | 299 | 4,735 |
| March | | | | | | | | | | | | | | 438 | 3,749 | | | | | | | 438 | 5,173 |
| April | | | | | | | | | | | | | | 443 | 4,192 | | | | | | | 443 | 5,616 |
| May | | | | | | | | | | | | | | 420 | 4,612 | | | | | | | 420 | 6,036 |
| June | | | | | | | | | | | | | | 421 | 5,033 | | | | | | | 421 | 6,457 |
| July | | | | | | | 32 | | | | | | | 403 | 5,436 | 40 | 426 | 18 | 293 | | | 461 | 6,918 |
| August | | | | | | | 31 | | | | | | | 417 | 5,853 | 374 | 800 | 114 | 407 | | | 905 | 7,823 |
| September | | | | | | | | | | | | | | 400 | 6,253 | 365 | 1,165 | 172 | 579 | | | 937 | 8,760 |
| October | | | | | | | | | | | | | | 194 | 6,447 | 190.35 | 1,355.35 | 297 | 876 | | | 681.35 | 9,441.35 |
| November | | | | | | | | 32 | | | | | | | | | | 354 | 1,230 | | | 354 | 9,795.35 |
| December | | | | | | | | 19 | | | | | | | | | | 364 | 1,594 | | | 364 | 10,159.35 |
| 1909 | | | | | | | 63 | 51 | | | | | | 3,687 | | 1,046.35 | | 1,451 | | | | 6,184.35 | |
| 1908 | | 143 | | 132 | 79 | 41 | | | | 132 | 222 | 736 | | 2,728 | | 309 | | 143 | | | | 3,916 | |
| 1907 | 151 | | 67 | | | 6.3 | | | | 151 | | 27 | | 32 | | | | | | | | 59 | |
| Total | 151 | 143 | 67 | 132 | 79 | 47.3 | 63 | 51 | | 283 | 222 | 763 | | 6,447 | | 1,355.35 | | 1,594 | | | | 10,159.35 | |



## MAP OF SHAFTS AND DRIFTS

## SECTION I, SOUTHWEST LAND TUNNEL

December 31, 1909

NOTE:—

Heavy black lines show tunnel completed previous to January 1st, 1909.

Red lines show Arch and Invert lined in 1909.

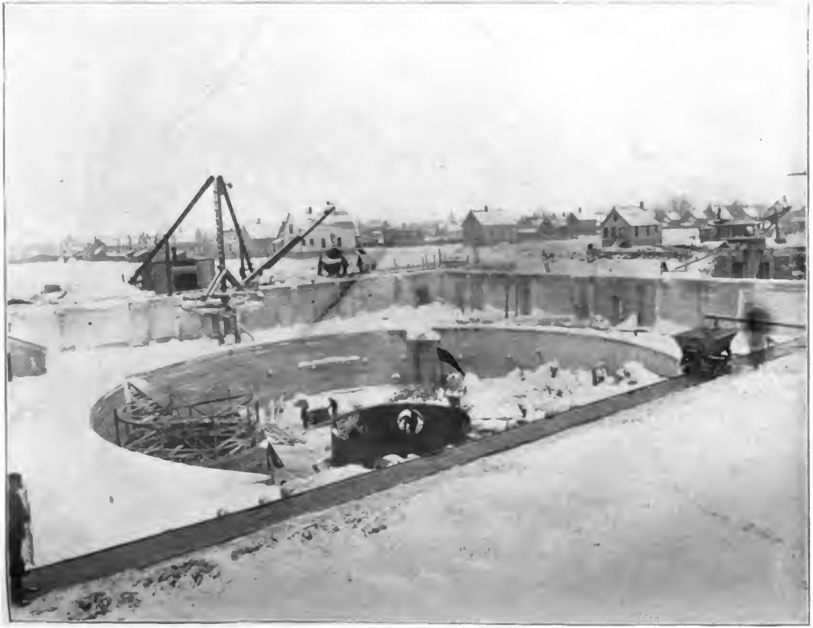
Dotted red lines show Invert only lined in 1909, the Arch being lined previously.

Section No 1 completed April 30th, 1909.

## LINEAL FEET OF TUNNEL LINED EACH MONTH—SECTION 1, SOUTHWEST LAND TUNNEL.

| DATE | DRIFT 1 | | DRIFT 2 | | DRIFT 3 | | DRIFT 4 | | DRIFT 5 | | DRIFT 6 | | DRIFT 7 | | ALL DRIFTS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert | Arch | Invert |
| 1907—January | 430 | 430 | | | | | | | | | | | | | 430 | 430 |
| February | 18 | 18 | | | | | | | | | | | | | 18 | 18 |
| March | 54 | 54 | | | | | | | | | | | | | 54 | 51 |
| March-December | | | | | | | | | | | | | | | | |
| 1907 | 502 | 502 | | | | | | | | | | | | | 502 | 502 |
| 1908—January | | | | | | | | | | | | | | | | |
| February | | | | | | | | | | | | | | | | |
| March | | | | | | | | | | | | | | | | |
| April | | | | | | | | | | | | | | | | |
| May | | | | | | | | | | | | | | | | |
| June | | | 100 | | | | | | | | | | | | 100 | |
| July | | | 1,301 | | 1,198 | 15 | | | | | | | | | 2,499 | 15 |
| August | | | 580 | 1,949 | 1,044 | 1,109 | | | | | | | | | 1,624 | 3,058 |
| September | | | 1,310 | 1,124 | 716 | 1,834 | | | | | | | | | 2,026 | 2,958 |
| October | | | 40 | 258 | 12 | 12 | | | | | | | | | 52 | 270 |
| November | | | | | 160 | | | | | | | | | | 160 | |
| December | | | 14 | 14 | 621 | 4 | 1,358 | | 1,896 | | 544 | | 522 | | 4,955 | 18 |
| 1908 | | | 3,345 | 3,345 | 3,751 | 2,974 | 1,358 | | 1,896 | | 544 | | 522 | | 11,416 | 6,319 |
| 1909—January | | | | | | 777 | 1,612 | 1,721 | 1,280 | 2,126 | 2,066 | | 1,980 | | 6,938 | 4,624 |
| February | | | | | | | 520 | 1,769 | 1,044 | 1,944 | 932 | | 814 | | 3,310 | 3,713 |
| March | | | | | | | 11.5 | 11.5 | 16.2 | 166.2 | 94 | 3,636 | 78.6 | 3,394.6 | 200.3 | 7,208.3 |
| 1909 | | | | | | 777 | 2,143.5 | 3,501.5 | 2,340.2 | 4,236.2 | 3,092 | 3,636 | 2,872.6 | 3,394.6 | 10,448.3 | 15,545.3 |
| 1908 | | | 3,345 | 3,345 | 3,751 | 2,974 | 1,358.0 | | 1,896.0 | | 544 | | 522.0 | | 11,416.0 | 6,319.0 |
| 1907 | 502 | 502 | | | | | | | | | | | | | 502.0 | 502.0 |
| **Total** | **502** | **502** | **3,345** | **3,345** | **3,751** | **3,751** | **3,501.5** | **3,501.5** | **4,236.2** | **4,236.2** | **3,636** | **3,636** | **3,394.6** | **3,394.6** | **22,366.3** | **22,366.3** |

| No. 5 | Drift No. 6 | | Drift No. 7 | | All Drifts | |
|---|---|---|---|---|---|---|
| Total | Per Month | Total | Per Month | Total | Per Month | Total |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | ........ | ........ | ........ | ........ | 49.6 | 49.6 |
| ........ | ........ | ........ | ........ | ........ | 79.1 | 128.7 |
| ........ | ........ | ........ | ........ | ........ | 118.0 | 246.7 |
| ........ | ........ | ........ | ........ | ........ | 313.3 | 560.0 |
| ........ | ........ | ........ | ........ | ........ | 484.0 | 1044.0 |
| ........ | ........ | ........ | ........ | ........ | 264.0 | 1308.0 |
| ........ | ........ | ........ | ........ | ........ | 1308.0 | ........ |
| ........ | ........ | ........ | ........ | ........ | 229.0 | 1537.0 |
| ........ | ........ | ........ | ........ | ........ | 215.0 | 1752.0 |
| ........ | ........ | ........ | ........ | ........ | 272.0 | 2024.0 |
| ........ | ........ | ........ | ........ | ........ | 216.0 | 2240.0 |
| ........ | ........ | ........ | ........ | ........ | 427.0 | 2667.0 |
| ........ | ........ | ........ | ........ | ........ | 536.0 | 3203.0 |
| 20.0 | ........ | ........ | ........ | ........ | 595.0 | 3798.0 |
| 193.0 | ........ | ........ | ........ | ........ | 929.0 | 4727.0 |
| 434.0 | ........ | ........ | ........ | ........ | 993.0 | 5720.0 |
| 725.0 | 65.0 | 65.0 | 80.0 | 80.0 | 1154.0 | 6874.0 |
| 992.0 | 190.0 | 255.0 | 179.0 | 259.0 | 1322.0 | 8196.0 |
| 1271.0 | 265.0 | 520.0 | 287.0 | 546.0 | 1509.0 | 9705.0 |
| ........ | 520.0 | ........ | 546.0 | ........ | 8397.0 | ........ |
| 1567.0 | 289.0 | 809.0 | 288.0 | 834.0 | 1688.0 | 11393.0 |
| 1841.0 | 275.0 | 1084.0 | 278.0 | 1112.0 | 1556.0 | 12949.0 |
| 2123.0 | 295.0 | 1379.0 | 298.0 | 1410.0 | 1353.0 | 14302.0 |
| 2367.0 | 293.0 | 1673.0 | 291.0 | 1701.0 | 1088 0 | 15390.0 |
| 2628.0 | 325.0 | 1997.0 | 307.0 | 2008.0 | 1201.0 | 16591.0 |
| 2905.0 | 312.0 | 2309.0 | 293.0 | 2301.0 | 1173.0 | 17764.0 |
| 3167.0 | 297.0 | 2606.0 | 299.0 | 2600.0 | 1077.0 | 18841.0 |
| 3425.0 | 283.0 | 2889.0 | 277.0 | 2877.0 | 1078.0 | 19919.0 |
| 3689.0 | 236.0 | 3125.0 | 260.0 | 3137.0 | 1047.0 | 20966.0 |
| 3970.0 | 276.0 | 3401.0 | 257.6 | 3394.6 | 899.1 | 21865.1 |
| 4236.2 | 235.0 | 3636.0 | | ........ | 501.2 | 22366.3 |
| ........ | | ........ | ........ | ........ | | ........ |
| ........ | 3116.0 | ........ | 2848.6 | ........ | 12661.3 | ........ |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| ........ | 3116.0 | ........ | 2848.6 | ........ | 12661.3 | ........ |
| ........ | 520.0 | ........ | 546.0 | ........ | 8397.0 | ........ |
| ........ | ........ | ........ | ........ | ........ | 1308.0 | ........ |
| ........ | 3636.0 | ........ | 3394.6 | ........ | 22366.3 | ........ |



ROSELAND PUMPING STATION PUMP PIT AND BUILDING FOUNDATIONS
PROGRESS PHOTOGRAPH TAKEN JANUARY 15, 1910

## ROSELAND PUMPING STATION.

MR. GEORGE F. SAMUEL, ASSISTANT ENGINEER, IN CHARGE.

The contract for the main building foundations of the station was awarded to the Parker-Washington Company on November 5, 1908. The unit prices are as follows:

| | | |
|---|---|---|
| Excavating for the pit of the building | $ 0.80 | per cu. yd. |
| Excavating for pump pit | .85 | " " " |
| Excavating for pump pit within an excavation | .85 | " " " |
| Excavating for suction well | 2.00 | " " " |
| Excavating for building foundation | 1.00 | " " " |
| Piling | 11.00 | each |
| Concrete | 9.20 | per cu. yd. |
| Backfilling with sand | .90 | " " " |
| Backfilling with earth | .25 | " " " |
| Removal of concrete | 1.50 | " " " |
| Reinforcing steel | .03 | per lb. |
| Structural steel | .05 | " " |
| Four suction wells (complete) | $700.00 | each |

The contract for the boiler room foundations was awarded to the Company on September 10, 1909. The unit prices are as follows:

| | | |
|---|---|---|
| Excavating for the pit of the building | $ 0.75 | per cu. yd. |
| Excavating for the building foundation trench | 1.00 | " " " |
| 35 foot piles furnished and driven | 12.00 | each |
| 30 foot piles furnished and driven | 10.50 | " |
| Concrete masonry | 7.50 | per cu. yd. |
| Backfilling (earth) | .25 | " " " |
| Reinforcing steel | .03 | per lb. |
| Structural steel, bolts, etc. | .04 | " " |

The excavation for the main building was begun on April 8, 1909, and for the boiler room foundations on October 5, 1909. Work on both contracts was carried on until December 5th, when a period of cold weather prevented any further work during the remainder of the year. On December 31st the contract for the main building foundations was practically completed, with the exception of the concrete wall of the suction well and a small opening in the east wall. On the boiler room contract the excavation was practically completed, the piles were driven, and the concrete footings were in place. About 1,000 cubic yards of concrete remain to be placed in order to complete the contract.

On September 8, 1909, a contract was awarded to the Allis-Chalmers Company for the building and erection of two 25,000,000-gallon vertical, triple expansion pumping engines, and one electric crane, the contract price being $259,900.00.

A contract was awarded to the Parker-Washington Company on April 10, 1909, for the necessary pavement around the station. The contract price was $2,125.00. The work was finished during the year.

On December 6, 1909, a contract was awarded to the Warner Construction Company for the erection of the super-structure of the station, the contract price being $229,864.00.

On December 8, 1909, a contract was awarded to John Carl Stein for the plumbing, drainage and gas-fitting, the contract price being $10,600.00.

### ROGERS PARK PUMPING STATION.

A new boiler room was built at a point east of the old building, and two horizontal, tubular boilers of 80 horse power each, equipped with Hawley down-draft furnaces were installed. The boilers and furnaces were those taken from the old City Hall at the time it was torn down.

The concrete and brickwork, carpentry, roofing and painting of the building were done by City day labor.

A contract for the complete installation of two new horizontal pressure type filters, each having a capacity of 500,000 gallons per day, was awarded to Gindele Bros. & Co. on August 2, 1909, at a contract price of $4,725.00. The foundations for the same had been built before the City purchased the station. The filter tanks are 8 feet in diameter and 20 feet long and were made for Gindele Bros. & Co. by the Gem City Boiler Co. of Dayton, Ohio. The tanks were delivered on November 9th and placed on the foundations by November 12th.

By December 31, 1909, the pipe connections were complete; the concrete work supporting the manifold headers and arms had been laid and the brass strainers were in place.

## BLUE ISLAND AVENUE TUNNEL.

MR. W. D. BARBER, ASSISTANT ENGINEER, IN CHARGE.

The contract was awarded to George W. Jackson, Inc., April 6, 1907, and the tunnel was completed December 31, 1908.

A contract for the enlargement and alterations of the shafts was awarded to George W. Jackson, Inc., on July 13, 1908. The work done during the year 1909 was completed by April 25, 1909, and was as follows:

SHAFT No. 1.—A vent pipe and temporary cover were provided for this shaft.

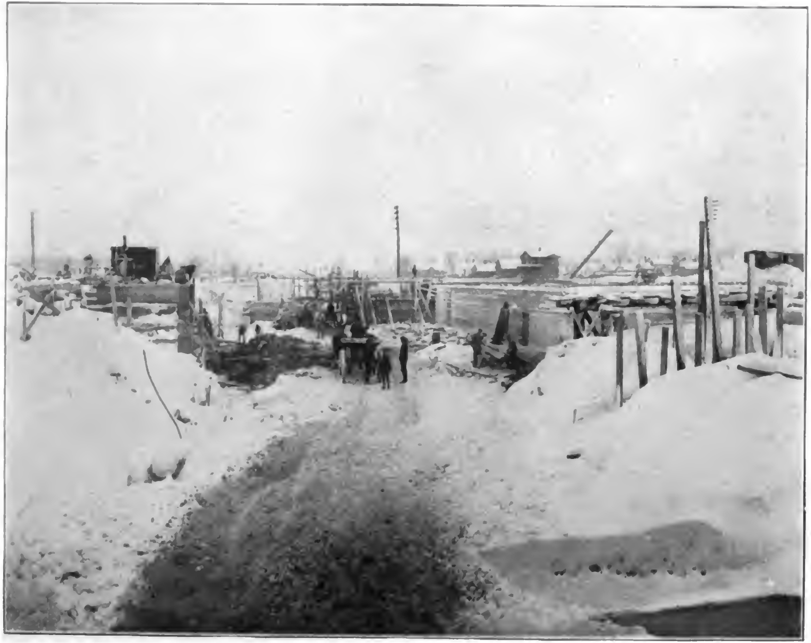
SHAFT No. 2.—The upper platform for the gate stands was erected; the gate stems and channel beam guides for same were placed; and all parts of the gates were adjusted for service. The upper concrete cover over the shaft was built and provided with an 8-inch vent pipe.

SHAFT No. 4.—Placed lattice doors at the entrance of the side or passageway to the shaft and adjusted and oiled the movable bearings of gates.

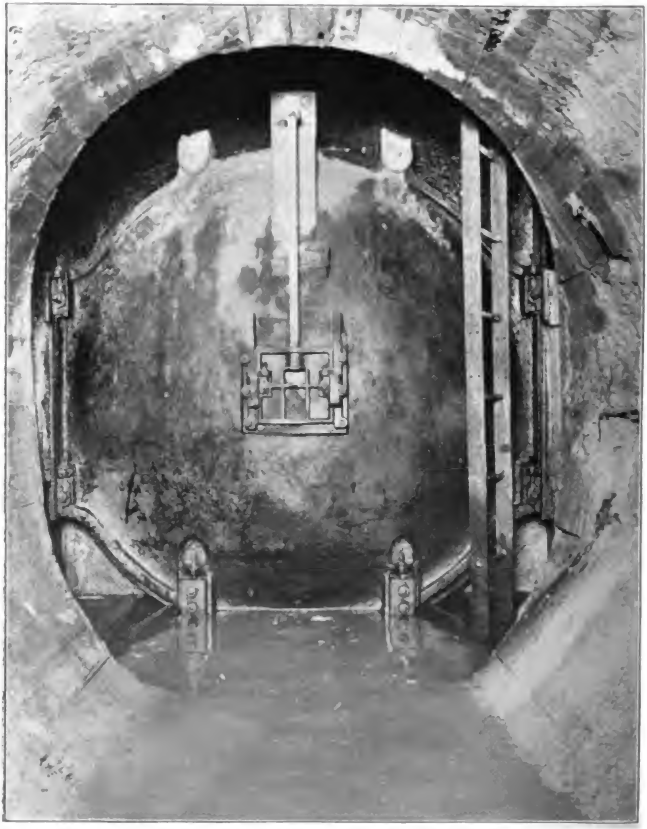
SHAFT No. 5.—Placed lattice doors at side passage entrance as in shaft 4. Placed the shaft vent pipe and oiled and adjusted all parts of the gate.

SHAFT No. 6.—The top of the shaft was concreted over and a vent pipe was provided.

SHAFT No. 11.—By January 1, 1909, water in the shaft had been pumped out and a portion of the concrete and rock had been blasted out at the lower level and preparations were being made to place the reinforced concrete and set the gate. By the end of February the work at this shaft was complete, all gates having been set and adjusted and the shaft domed over and made ready for operation.



ROSELAND PUMPING STATION BOILER HOUSE FOUNDATIONS
PROGRESS PHOTOGRAPH TAKEN JANUARY 15, 1910



Sluice Gate in Shaft No. 1, Blue Island Avenue Tunnel
View in Tunnel Showing Gate Closed

During February shafts Nos. 1, 3 and 10 were completed by placing air vents in the top of each shaft.

On April 21, 1909, a contract was awarded to the Empire Construction Company for the placing of one gate in shaft No. 1; for the extension of drift No. 3 of the Blue Island Avenue Land Tunnel to connect with existing shaft "M" situated near the southwest corner of the Chicago Avenue Pumping Station; for the connection with Polk Street Tunnel on Jefferson street near Van Buren street; for the connection of this stub drift from the upper level of shaft No. 11 with the old stub drift near the southeast corner of the Twenty-second Street Pumping Station; and for the placing of three bulkheads in the old cross-town 7-foot tunnel, two being in Jefferson street near Van Buren street, and one just south of shaft "F" at the Chicago Avenue Pumping Station.

The work performed by the Empire Construction Company was completed in the following order: At Ashland avenue and 22nd street beyond the end of the stub drift which ran west from shaft 11 at an elevation of 23.5 feet C. D., a working shaft of 7 feet internal diameter was sunk to a point on a level with the bottom of the stub drift. From this shaft a six foot drift was run, curving northwest for a distance of 119.8 feet, at which point it connected with the old 7-foot stub drift from the tunnel used to supply the pumping station. After this connection was completed the concrete bulkhead in the west stub drift, 18 feet west of shaft 11, was removed. The drift through the working shaft was concreted over and the shaft was filled in with earth. The wooden lining with the steel rings bracing the same were left in the shaft when it was filled in. This precaution was taken to prevent any caving or settlement of sides of shaft. The above was completed on May 30th.

The next connection was made at the Chicago Avenue Pumping Station, shaft "M." The tunnel gates controlling the water flowing to the shaft were closed. The covering over shaft was removed and the water was pumped down to an elevation of about —54.0 feet C. D. A platform was built in the shaft at an elevation of —50.0 feet C. D. An 8-foot drift was then cut on the west side of shaft at an elevation of —45.2 feet C. D. and was run for a distance of 24 feet to the end of drift No. 3 of the Blue Island Avenue Tunnel. After the completion of this drift, the concrete bulkhead from near the end of drift No. 3 was removed. The platform and pump were removed from shaft "M"; the cover was replaced on the shaft; and the gates which controlled the water supply to the shaft were opened. This portion of the work was completed in June, 1909.

Following the above work an 8-foot gate was set on the east side of shaft No. 1. A 6-inch grout lining, composed of one part of cement to two parts of torpedo sand, was placed just inside the original concrete lining from the bottom of sump to the top of shaft. This lining made the shaft water-tight, and was placed to prevent seepage of water into the shaft. The work was completed September 17, 1909.

When shaft No. 1 was completed the gate at this shaft was closed and a 12-inch by-pass in one of the gates in shaft No. 2 was opened about 3 inches, and the water was permitted to fill the Blue Island Avenue Tunnel. The tunnel was being filled on September 14th, 15th, and 16th.

Following the above work the City Diver removed an oak bulkhead from the old 7-foot stub drift at the Twenty-second Street Pumping Station, and closed off the cross-town tunnel at this point as follows: Two wooden bulkheads shaped to conform to the 10-foot diameter of shaft were lowered to the bottom of shaft; oakum was caulked between the lining of the shaft and the bulkhead, which was securely braced against the sides of shaft over the end of the drifts. After the bulkheads were placed and braced a rich concrete mixture, proportions 1-2-4, was placed over the bulkheads and the shaft was filled to a point about 5 feet above the top of drifts. The cover of the shaft was then replaced. The work was performed between September 9 and October 7, 1909.

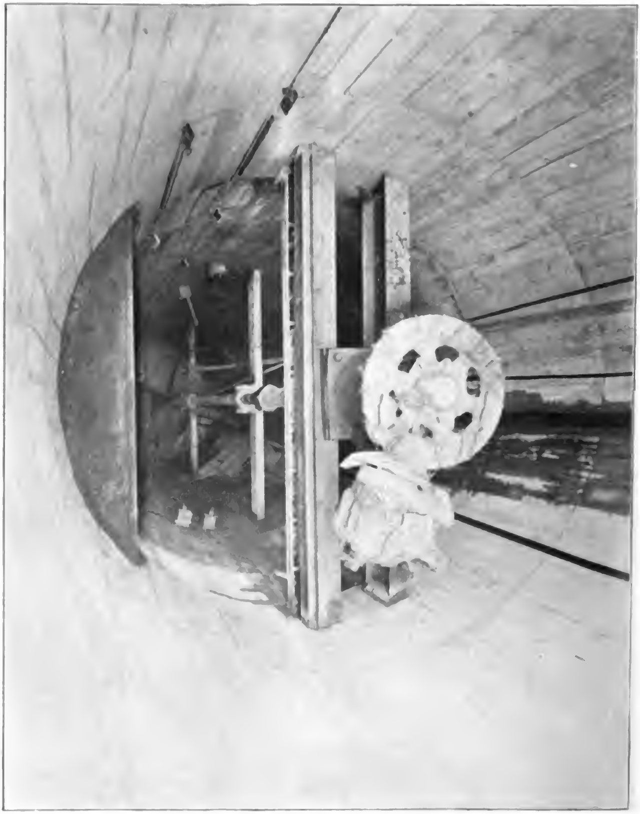
Another concrete bulkhead was placed by City labor in Desplaines street, near Harrison street, in order to cut off the Polk Street Tunnel from the 7-foot cross-town tunnel, October 9 to 19, 1909.

Before the completion of the City's part of the work on these bulkheads gate No. 11 in shaft "B" was closed on September 22nd, and the southwest gate in shaft "A" at Chicago Avenue was closed on September 23rd, thereby controlling the flow of water in the 5-foot and 7-foot drifts leading to shaft "F". The top was removed from shaft "F", so as to allow for the lowering of a pump to remove the water from the 7-foot cross-town tunnel between the concrete bulkhead at Desplaines street near Harrison street and shaft "F".

The elevation of the cross-town tunnel at the Jefferson street shaft, bottom of drift, is —50.0 feet C. D. and at shaft "F" —69.3 feet C. D. or 19.3 feet lower at shaft "F" than at Jefferson street.

This enabled the contractors to begin work on the connection at Jefferson and Van Buren streets. The work on this connection was done from the old cross-town tunnel (10-foot) shaft. A wooden platform was built over the sump in the shaft and an 8-foot drift was run directly north 32 feet to stub end of drift No. 8 of the Blue Island Avenue Tunnel. After the drift and connection were completed the concrete bulkhead 16 feet south of shaft No. 5 on the Blue Island Avenue Tunnel was removed, and two 7-foot concrete bulkheads were placed in the cross-town tunnel on the southwest and northeast sides of shaft, adjacent and conforming to the radius of the inside of the shaft. This part of the work was completed November 19, 1909.

A 7-foot concrete bulkhead was placed just southwest of shaft "F" in the old 7-foot cross-town tunnel, which, in connection with the other bulkheads mentioned, closes off the old cross-town tunnel. The work was completed November 24, 1909. When the work mentioned in connection with this cross-town tunnel was completed the south gate in shaft No. 5, Blue Island Avenue Tunnel, was opened, as well as 5-foot gate in gate shaft, about 10 feet south of Jefferson and Van Buren street cross-town



SHAFT NO. 1, BLUE ISLAND AVENUE TUNNEL, IN DELAWARE PLACE
EAST OF LAKE SHORE DRIVE. VIEW DOWN SHAFT
AFTER PLACING WATERPROOF LINING

VIEW IN OLD CROSS TOWN TUNNEL AFTER ABOUT THIRTY-FIVE YEARS SERVICE tunnel shaft, thus connecting the Blue Island Avenue Tunnel with the Polk Street Tunnel. This part of the work was completed on November 29, 1909.

The connection provided will permit of water being supplied directly to the Harrison Street Pumping Station from the Blue Island Avenue Tunnel as an auxiliary to the Polk Street Tunnel.

The cross-town tunnel was built during the years 1873 and 1874, and was shortly afterwards put into service and used continuously until September of 1909. The tunnel is circular in form, 7 feet internal diameter, lined with three rings of sewer brick laid in cement mortar.

An inspection was made of that portion between the Jefferson Street Shaft and the Chicago Avenue Pumping Station, and the condition was found as follows:

The brickwork was clean and looked as if it had just been built. Most of the old line and grade points as run by the Engineers during construction were in position, and a large percentage of the station numbers were still in position on the sides of the tunnel. For the entire length inspected no leaks, cracks or other defects were apparent. The short portion running under the river north of South Water Street was perfect in appearance, having been plastered with about ¾ of an inch of cement mortar inside of the regular brickwork.

There was 20,639 feet of this 7-foot tunnel abandoned.

The Blue Island Avenue Tunnel was placed in operation September 19th at 2:30 P. M.

## SUMMARY OF COST OF THE BLUE ISLAND AVENUE LAND TUNNEL.

Construction of Tunnel and Shafts—contractor, George W. Jackson Company, Inc.; date of contract, April 6, 1907.

| Kind of Work | Quantity | Unit Price |
|---|---|---|
| 10-foot shaft in rock.................... | 76.2 feet | $140.00 per foot |
| 10-foot shaft in earth.................... | 141.5 " | 125.00 " " |
| 10-foot shaft in earth.................... | 221.5 " | 110.00 " " |
| 10-foot shaft in earth.................... | 102.5 " | 90.00 " " |
| 8-foot tunnel in rock.................... | 844.0 " | 39.00 " " |
| 8-foot tunnel in earth.................... | 28,078.7 " | 19.70 " " |

Estimated........................................ $651,071.89

Enlargement and alteration of Shafts—contractor, George W. Jackson Company, Inc.; date of contract, July 13, 1908.

| Kind of Work. | Quantity. | Unit Price. |
|---|---|---|
| Steel in place.......... | 262,230.8 pounds | $ 0.08 |
| Lumber in place....... | 139,258 feet B. M. | 60.00 M. |
| Earth excavation ...... | 1,340.64 cubic yards | 3.00 cubic yard |
| Earth fill ............. | 508.52 " " | 1.25 " " |
| Rock excavation ...... | 126.52 " " | 8.00 " " |
| Concrete . . . ........ | 571.77 " " | 9.00 " " |
| Pumping . . ........... | 526 days | 15.00 per day |
| Additional work ...... | Gross................ | 384.70 |
|  | Cost . . . ........... | $57,842.24 |

Furnishing ten 8-foot sluice gates and sixteen 6-inch by-passes. Contractor. The Coffin Valve Company; date of contract, May 29, 1908; cost, $17,309.30.

Connecting the Tunnel with existing tunnels and pumping stations. Contractor, Empire Construction Company; date of contract, April 2, 1909.

| Kind of Work. | Quantity. | Unit Price. |
|---|---|---|
| Setting gate and lining shafts.......... | ............... | $2,500.00 |
| Tunnel in earth ...................... | 119.8 feet | 30.00 per foot |
| 8-foot tunnel in earth.................. | 24. " | 41.00 " " |
| 8-foot tunnel in earth.................. | 32. " | 36.50 " " |
| Pumping . . .......................... | 149⅙ days | 30.00 per day |
| Concrete bulkheads ................... | 3 | 350.00 gross |
| Cost.................................. |  | $13,071.00 |

| | |
|---|---|
| Services of divers, laborers, etc., for removing bulkheads and filling in old shafts, etc., all done outside of regular contract by City labor. Cost ..................................$ | 3,617.92 |
| Office rent, telephone and miscellaneous expenses............. | 1,171.07 |
| Advertising, blue prints, office supplies, car fare and instruments used by engineers and inspectors ...................... | 4,921.01 |
| Salaries of draftsmen, engineers and inspectors ............. | 80,700.16 |
| Grand total expense .................................... | $829,704.59 |

## TABLE OF SIZES AND LENGTHS OF CHICAGO WATER TUNNELS.

| NAME OF TUNNEL | Year put in service | LINEAL FEET. 14* feet diam. | 12* feet diam. | 10 feet diam. | 9* feet diam. | 8 feet diam. | 7 feet diam. | 6 feet diam. | 5 feet diam. | Total Length of Tun'ls in Service | Abandoned Tunnels L'ngth | Size feet diam. | Year | Grand total all Tun'ls |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lake View Tunnel ......... | 1896 | ...... | ...... | ...... | ...... | ...... | ...... | 10,605 | 125 | 10,730 | 1,567 | 6 | 1892 | 12,297 |
| N. W. Land Tunnel, Sec. 1.. | 1900 | ...... | ...... | 8,666 | ...... | ...... | ...... | ...... | ...... | 8,666 | ...... | ...... | ...... | 8,666 |
| N. W. Land Tunnel, Sec. 2.. | 1900 | ...... | ...... | ...... | ...... | 19,844 | ...... | ...... | ...... | 19,844 | ...... | ...... | ...... | 19,844 |
| N. W. Land Tunnel, Sec. 3.. | 1900 | ...... | ...... | ...... | ...... | 22,183 | ...... | ...... | ...... | 22,183 | ...... | ...... | ...... | 22,183 |
| N. E. Lake Tunnel ......... | 1898 | ...... | ...... | 14,033 | ...... | ...... | ...... | ...... | ...... | 14,033 | ...... | ...... | ...... | 14,033 |
| Blue Island Ave. Tunnel.... | 1909 | ...... | ...... | ...... | ...... | 29,293 | 164 | 112 | ...... | 29,569 | ...... | ...... | ...... | 29,569 |
| Old Cross Town Tunnel..... | 1875 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 20,639 | 7 | 1909 | 20,639 |
| Old Cross Town Tun'l Ext... | 1875 | ...... | ...... | ...... | ...... | ...... | 10,827 | ...... | ...... | 10,827 | ...... | ...... | ...... | 10,827 |
| Chicago Av. Tunnel Ext..... | 1898 | ...... | ...... | ...... | ...... | ...... | 960 | 518 | 127 | 1,605 | ...... | ...... | ...... | 1,605 |
| Chicago Av. 5-ft. Lake Tun'l. | 1867 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 10,625 | 10,625 | ...... | ...... | ...... | 10,625 |
| Chicago Ave. P. S. Tunnels. | 1895 | ...... | ...... | ...... | ...... | ...... | 145 | 187 | 1,180 | 1,512 | 200<br>600 | 5<br>4½ | 1906<br>1906 | 2,312 |
| North Shore Extension ..... | 1895 | ...... | ...... | ...... | ...... | ...... | 10,636 | ...... | ...... | 10,636 | ...... | ...... | ...... | 10,636 |
| 4-Mile Tunnel ............. | 1892 | ...... | ...... | ...... | ...... | 9,020 | ...... | 25,920 | ...... | 34,940 | ...... | ...... | ...... | 34,940 |
| 4-Mile Tunnel Extension .... | 1888 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 5,240 | 7 | 1907 | 5,240 |
| Polk Street Tunnel ......... | 1907 | ...... | ...... | ...... | ...... | ...... | 7,930 | 1,105 | ...... | 9,035 | ...... | ...... | ...... | 9,035 |
| 14th St. P. S. Tunnels........ | 1889 | ...... | ...... | ...... | ...... | 475 | ...... | 2,166 | ...... | 2,641 | ...... | ...... | ...... | 2,641 |
| 68th St. Crib & P. S. Tun'ls. | 1898 | ...... | ...... | ...... | ...... | ...... | 12,685 | ...... | 7,975 | 20,660 | 5,120<br>950 | 6<br>7 | 1899<br>1899 | 26,730 |
| S. W. Land Tunnel......... | 1911† | 13,003 | 15,897 | ...... | 24,493 | ...... | ...... | ...... | ...... | 53,393 | ...... | ...... | ...... | 53,393 |
| Totals ................ | | 13,003 | 15,897 | 22,699 | 24,493 | 80,815 | 43,347 | 40,613 | 20,032 | 260,899 | 34,316 | | | 295,215 |

*Equivalent areas. †Estimated. Total of all tunnels equals 55.91 miles.

## LAWRENCE AVENUE PUMPING STATION
## AND
## LAWRENCE AVENUE CONDUIT.

MR. W. R. MCCREADY, ASSISTANT ENGINEER, IN CHARGE.

It was found necessary to remove the silt and rubbish which had accumulated to an average depth of about 4½ feet in the 16-foot conduit between the pumping station and Lake Michigan, and a contract for removing the same was awarded to John P. Dougherty on March 2, 1909.

Owing to the difficulty of handling the material, the work was not completed until May 21st. Fresh water was turned into the conduit on May 27th and the screw pump was started on the following day. In order to operate the pump to its full capacity, it was necessary to remove some temporary piling and sheeting from in front of the outfall bulkhead, and to increase the width and depth of the channel leading from the outlet bulkhead to the edge of the river bank, a distance of about 40 feet. The work was done by City labor.

The R. F. Conway Company were awarded a contract for placing a combination concrete curb and gutter and placing asphalt paving in front of the station and between Evanston avenue and the C. M. & St. P. Ry. right of way, the contract price being $2,886.50. The cement sidewalk in front of the station ground was built to cover the entire space between building and curb. A contract was awarded on August 16, 1909, to T. J. Prendergast for the construction of a screen wall on the pipe line used to supply cold water to the barometric condensers, in order to prevent fish, leaves, and other debris from being pumped into the condensers. The contract price was $1,125.00. The Southwestern Architectural Iron Works was awarded a contract on August 17, 1909, for the erection of an iron platform in the boiler room about the "Hoppes" purifier and valves in connection with the piping leading to the purifier, and for placing an iron flagpole on the front wall of the main building. The contract price was $834.00. The Warner Construction Company was awarded a contract on October 18, 1909, for building a concrete curb around the station grounds and a concrete hopper bottom in the coal storage room preparatory to the installation of coal handling machinery, at a contract price of $1,440.00.

The coal and ash handling machinery which is to be driven by an electric motor is being installed by the Link Belt Company on their contract of September 23, 1909, and will be ready for operation by the latter part of January, 1910. The contract price is $7,971.00.

The miscellaneous work done consisted of rearranging electric lighting on screw pump engine; installing additional lights on centrifugal pumping engines; also setting iron electric lamps on posts of railing around screw pump engine pit; cutting drains in basement and waterproofing ash pit; lowering coal track and planking track at the alley crossing and under the coal chutes; grading station grounds and filling in black dirt on west side of the building for lawn.

### TESTS OF PUMPING ENGINES NOS. 1, 2 AND 4 AT LAWRENCE AVENUE PUMPING STATION.

PUMPING ENGINE No. 1.—Consists of a submerged centrifugal pump, of the single suction, vertical shaft type, directly connected to a horizontal compound, condensing engine set at an angle of 90 degrees. The connecting rods are connected side by side to a single crank pin. Its capacity is 37½ cubic feet per second against a head of 9¾ feet when running approximately 98 R. P. M. with a steam pressure of 150 pounds per square inch at the engine throttle.

The pump is designed to handle the dry weather flow of sewage. The builder's guarantee on this engine under the above conditions is not less than 72,000,000 foot pounds per 1,000 pounds of commercially dry steam, which is defined as steam containing not more than 2 per cent. moisture.

PUMPING ENGINES No. 2 AND No. 3.—Pumping engines No. 2 and No. 3 are alike. Each unit consists of a submerged centrifugal pump, of the single suction, vertical shaft type, directly connected to a horizontal, compound, condensing engine, set at an angle of 90 degrees. The connecting rods are connected side by side to a single crank pin. Each pump is designed to deliver 125 cubic feet of water per second against a head of 5 feet when running approximately 65 R. P. M. with a steam pressure of 150 pounds per square inch at the engine throttle.

These pumps are designed to handle storm water.

The builder's guarantee on each of these units under above conditions was for not less than 78,000,000 foot pounds per 1,000 pounds of commercially dry steam.

PUMPING ENGINE No. 4.—Consists of a vertical, triple-expansion, condensing engine, arranged with the high pressure and intermediate cylinders set at tandem. This engine is placed in an open pit and connected to the shaft of a submerged screw pump. The pump forces lake water into the conduit west of the station, and has a capacity of 585 cubic feet per second against a head of 3¼ feet when operated at a speed 52 R. P. M. with a steam pressure of 150 pounds per square inch. The builder's guarantee on this pump was 80,000,000 foot pounds per 1,000 pounds of commercially dry steam.

As the duty guarantee was based upon the quantity of sewage or water pumped, the difference of water levels in the suction and discharge channels and the amount of steam consumed by the engines while performing the work, each test resolved itself into three principal parts:

1st, The determination of the quantity of sewage or water pumped.
2nd, The determination of the average head.
3rd, The determination of the amount of steam supplied to the engines.

1. DETERMINATION OF QUANTITY OF WATER PUMPED.—As it was impossible to measure the water by pump displacement, the flow was measured by placing current meters in the discharge channels of the respective pumps. These current meters were previously carefully calibrated

and rated. The channel was calibrated at the points at which the current meters were set, to enable the cross-sectional area of the flowing stream to be accurately and easily determined for any water level. A special device was arranged, and a complete traverse of the channel was made in each case. The readings being taken in the rectangular discharge channel from pump No. 1 at 27 points, in the rectangular discharge channel from No. 2 at 56 points, and in the circular section channel of pump No. 4 at 64 points.

From a record of continuous readings of the measurements above described the volume of water pumped was determined. Samples of water were taken every hour, the temperatures were noted, and the weight per cubic foot was determined by laboratory measurement. The product of the average weight per cubic foot by the total cubic feet pumped gave the total weight lifted.

2. Determination of Head Pumped Against.—One level gauge was set in the suction and another in the discharge channel of each pump tested. These gauges consisted of large hollow metal floats to the tops of which a steel rod with a horizontal pointer was connected and arranged to pass before a fixed vertical scale marked in hundredths of feet. The zero point of the scales were carefully set by level observations referred to an accurate bench mark. The readings of both discharge and suction gauges were taken every five minutes.

The average difference in feet between the level of suction and discharge as thus determined, multiplied by the total weight of water pumped during the test, gives the total foot-pounds of work performed by the pumping unit.

3. Determination of Quantity of Steam Consumed by the Engines.—All steam used by auxiliaries necessary to operate the pump was charged against the engine. For each test one of the boilers in the plant was set aside and completely isolated by either opening the pipe beyond valves or inserting blanks in flanges. This was done on both steam and water lines.

The feed water to the boiler was weighed to determine the steam consumption and from this amount was deducted the following:

(a) Condensation drained off the steam line between boiler and engine.

(b) Steam passing through the calorimeter.

(c) Leakage of steam piping and boiler.

(d) Moisture in the steam if it exceeded 2 per cent.

A summary of each test is given below.

TEST OF CENTRIFUGAL PUMP NO. 1:

| | |
|---|---|
| Steam pressure at engine; lbs. per square inch on gauge. | 151.02 |
| Average total head pumped against, feet | 9.802 |
| Average revolutions per minute, main engine, R. P. M. | 88.4 |
| Total indicated horse-power | 56.26 |
| Combined mechanical efficiency, per cent | 67.3 |
| Moisture in steam, per cent | 1.51 |
| Steam used by engine, per indicated horse power, lbs. | 17.48 |
| Capacity of pump, cubic feet per second | 34.06 |
| Saturated steam used by engine per 24 hours, lbs. | 23,607 |
| Foot-pounds of work done per 24 hours | 1,801,196,691 |
| Duty per thousand pounds of saturated steam, foot-pounds | 76,299,262 |

TEST OF CENTRIFUGAL PUMP NO. 2:

| | |
|---|---|
| Steam pressure at engine, lbs. per square inch on gauge. | 151.4 |
| Average total head pumped against, feet | 5.111 |
| Average revolutions per minute, main engine | 59.28 |
| Total indicated horse power | 110.19 |
| Combined mechanical efficiency, per cent | 68.23 |
| Moisture in steam, per cent | 1.284 |
| Steam used by engine, per indicated horse power, lbs. | 15.61 |
| Capacity of pump, cubic feet per second | 129.58 |
| Saturated steam used by engine per 24 hours, lbs. | 41,287 |
| Foot-pounds of work done per 24 hours | 3,572,303,831 |
| Duty per thousand pounds of saturated steam, ft-pounds. | 86,523,696 |

NOTE.—By mutual agreement the test of the duplicate pump No. 3 was omitted on account of the difficulty of measuring the water delivered. This test covers both No. 2 and No. 3.

TEST OF SCREW PUMP NO. 4:

| | |
|---|---|
| Steam pressure at engine, lbs. per square inch on gauge. | 148.99 |
| Average total head pumped against, feet | 3.962 |
| Average revolutions per minute, main engine | 44.173 |
| Total indicated horse power | 351.49 |
| Combined mechanical efficiency, per cent | 76.14 |
| Moisture in steam, per cent | 1.36 |
| Steam used by engine per indicated horse power, lbs. | 12.205 |
| Capacity of pump, cubic feet per second | 597.20 |
| Saturated steam used by engine per 24 hours, lbs. | 102,958.5 |
| Foot-pounds of work done per 24 hours | 12,757,757,904 |
| Duty per thousand pounds saturated steam, foot-pounds. | 123,912,254 |

## LAWRENCE AVENUE INTAKE CRIB, SECTION N.

MR. J. C. PARKES, ASSISTANT ENGINEER, IN CHARGE.

The living rooms on the intake were finished by City labor. All three rooms have maple floors and are trimmed in oak. The walls are plastered and painted.

A permanent gangway has been built from protection landing to crib entrance, and a landing ladder was placed alongside of the same. A hand-windlass was erected for use in raising the row boat.

The crib has been equipped with heating and cooking stoves, cooking utensils, bedding, etc., complete for living purposes, and a City keeper has been in charge since November 15th.

A contract was awarded on July 1, 1909, to the Warner Construction Company for the erection of the roof and light tower. By December 31, 1909, the steel work was in place and the wood work was partly completed. The work was discontinued before completion on account of the weather. The contract price is $7,061.00.

### THIRTY-NINTH STREET PUMPING STATION.

Gauges were installed at various points in the suction and discharge channels and a well and screens were constructed for screening the water supply to the barometric condensers.

The roof of the coal storage building was destroyed by fire. The ruins of the old roof were removed by City labor, and a contract was awarded to Paschen Bros. on November 26, 1909, for the reconstruction of a fireproof roof and for necessary repairs to coal handling plant. The contract price is $1,367.00

### SEWER REVERSALS.

A sewer was constructed along the Illinois Central R. R. right of way from the intercepting sewer at 35th street to the alley between Groveland and Woodland Parks, and across the railroad right of way to a connection with the old Groveland Park sewer, the Groveland Park sewer having formerly flowed into Lake Michigan. This work was done by City labor at a total cost of $1,063.01, including the crossing of the Illinois Central right of way.

On October 11, 1909, a contract was awarded to E. H. Duffy for the construction of a manhole on the 39th street conduit at the intersection of Cottage Grove avenue with necessary relief sewer connections to the sewers at this point. The contract price is $999.00.

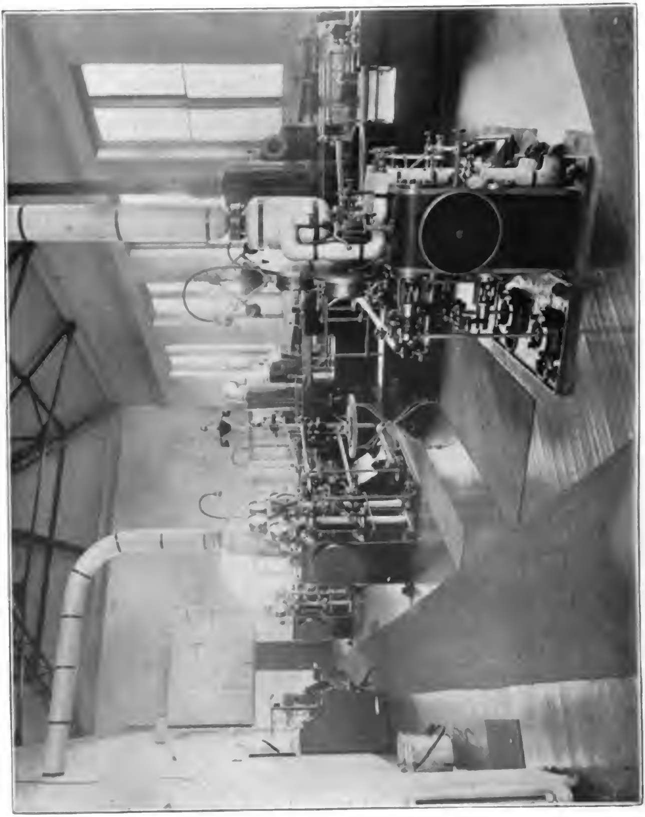
The Star Construction Company was awarded a contract on Oct. 20, 1909, for the construction of relief sewer connections with the Lawrence avenue conduit at Robey street and at Western avenue in order to take the overflow from the ordinary sewers, and for the rebuilding of the Todd street sewer. The contract price was $1,636.00.

### PROTECTION OF INTERCEPTING SEWER AT 35TH ST. AND LAKE MICHIGAN.

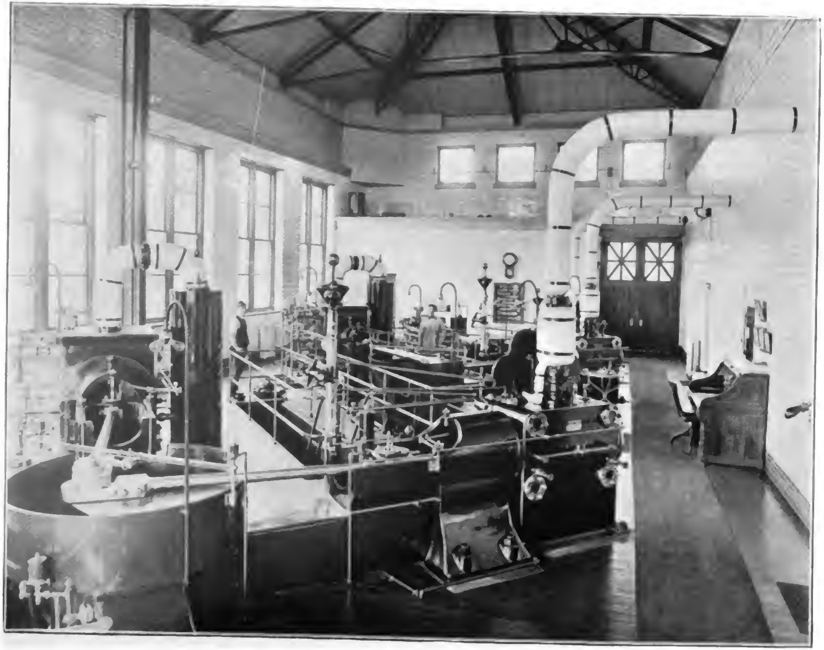
The action of the waves from Lake Michigan had stripped about 100 feet of the entire east side of the 8-foot intercepting sewer, which runs along the edge of the Lake south of 35th street. Eight carloads of slag filling were placed by City labor, and the sewer was completely protected.

### NINETY-FIFTH STREET PUMPING STATION.

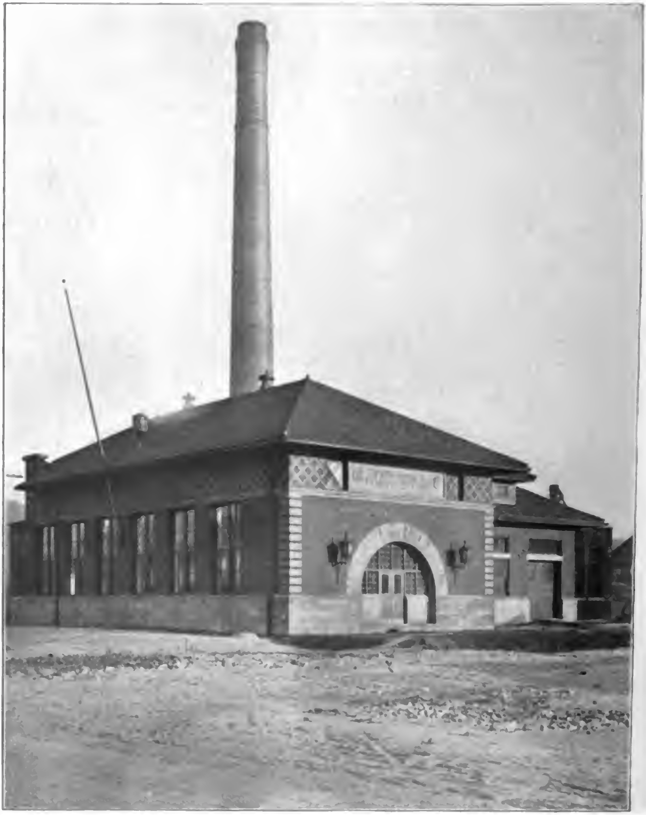
The Ninety-fifth Street Pumping Station is a sewage pumping station, under the jurisdiction of the Bureau of Sewers. The engineering supervision (except that on the engine room which was built by special assessment under the supervision of the Board of Local Improvements) was carried on as part of Intercepting Sewer work.



Ninety-fifth Street Pumping Station



NINETY-FIFTH STREET PUMPING STATION



NINETY-FIFTH STREET PUMPING STATION

On January 1, 1909, the City began operating pump No. 3 by the use of two temporary boilers, which were housed with common lumber at a point east of the engine room. This was necessary as the permanent chimney and the boilers and boiler room were not ready for use. The station was operated in this manner until the latter part of March, at which time the same pump was operated from the permanent boilers through a temporary steam connection.

In April, pump No. 2 was finished and was placed in operation by the installing of a temporary steam connection to the permanent boilers. The permanent piping was completed in June.

By August, all three pumps were in operation and work of wiring the station for electric lights was well under way.

By September, the machinery installed by the Allis-Chalmers Co. was completed and painted, and all steam pipes were covered.

The electric engine and generator has been contracted for.

The test on the boilers at this station was run on June 30, 1909, and was made by Robert W. Hunt & Co., representing the City, Mr. W. J. Williams, representing the Edge Moor Iron Co., and Pierce, Richardson & Neiler, the third and mutual representative.

The following is a tabulation of the data and results of the test:

## DATA AND RESULTS OF EVAPORATIVE TEST.

Made by—Robert W. Hunt & Co., Pierce, Richardson & Neiler and Mr. W. J. Williams at Ninety-fifth Street Pumping Station.
On—One 150 H. P. Edge Moor Water Tube Boiler.
To determine—Capacity and efficiency.
Kind of fuel—Miami (Illinois) Run of Mine.
Kind of furnace—Twin Fired Furnace.
Method of starting and stopping the test—Alternate.

| | |
|---|---|
| Grate surface | 30 square feet. |
| Water-heating surface | 1,500 " " |
| Superheating surface | None |

### TOTAL QUANTITIES.

| | |
|---|---|
| Date of trial | June 30, 1909. |
| Duration of trial, hours | 9.166 |
| Percentage of moisture in coal | 5.12 |
| Weight of coal as fired, lbs. | 9,883 |
| Total weight of dry coal consumed, lbs. | 9,377 |
| Total ash and refuse, lbs. | 1,045 |
| Percentage of ash and refuse in dry coal | 11.14 |
| Total weight of water fed to the boiler, lbs. | 59,008 |
| Water actually evaporated, corrected for moisture or superheat in the steam | 59,008 |
| Equivalent water evaporated into dry steam from and at 212° | 68,034 |

### HOURLY QUANTITIES.

| | |
|---|---|
| Dry coal consumed per hour, lbs. | 1,023 |
| Dry coal per square foot of grate surface per hour, lbs. | 34.1 |
| Water evaporated per hour, corrected for quality of steam, lbs. | 6,438 |
| Equivalent evaporation per hour from and at 212° | 7,422 |
| Equivalent evaporation per hour from and at 212° per square foot water-heating surface | 4.92 |

### AVERAGE PRESSURES, TEMPERATURES, ETC.

| | |
|---|---|
| Steam pressure by gauges (corrected), lbs. per square inch | 138 |
| Temperature of feed water entering boiler, degrees | 109.6 |

### AVERAGE PRESSURE TEMPERATURES, ETC.

| | |
|---|---|
| Temperature of escaping gases from boiler, degrees | 597 |
| Force of draft between damper and boiler (inches of water) | .61 |
| Percentage of moisture in steam | 1.76 |

### HORSE POWER.

| | |
|---|---|
| Horse power developed | 215.15 |
| Builders' rated horse power | 150 |
| Percentage of builders' rated horse power developed | 143 |

### ECONOMIC RESULTS.

| | |
|---|---|
| Water apparently evaporated under actual conditions per lb. of coal as fired, lbs. | 5.97 |
| Equivalent evaporation from and at 212° per lb. of coal as fired, lbs. | 6.88 |
| Equivalent evaporation from and at 212° per lb. of dry coal, lbs. | 7.25 |
| Equivalent evaporation from and at 212° per lb. of combustible, lbs. | 8.36 |

### EFFICIENCY.

| | |
|---|---|
| Calorific value of the dry coal per lb., B. T. U. | 11,604 |
| Efficiency of boiler, including grate (based on dry coal) | 60.3 |

### COST OF EVAPORATION.

| | |
|---|---|
| Cost of coal per ton 2,000 lbs. delivered in boiler room | $2.30 |
| Cost of coal required for evaporating 1,000 lbs. of water from and at 212° | .1671 |

ROBERT W. HUNT & CO.,
(Signed) WM. J. JENNINGS.

EDGE MOOR IRON CO.,
(Signed) W. J. WILLIAMS.

PIERCE, RICHARDSON & NEILER,
(Signed) EDWARD P. RICH.

## TESTING DIVISION.

HARRY C. PARKES, CHIEF TESTER.

The work of this division during the year 1909 consisted in making tests and inspection of such material furnished to various divisions of the Bureau of Engineering requiring tests or inspection.

COAL.—An evaporation test of the coal delivered under contract was made once each month at each of the eight principal water pumping stations. Samples of the coal delivered were taken on the average of once a week at each of these stations and intermittently at the smaller stations.

Laboratory tests for the determinations for the ash, moisture and British Thermal units were made on 451 samples of coal.

OIL.—Samples were taken from 300 barrels of cylinder and engine oils from oils delivered to the various pumping stations and tests made on the samples for determination of the specific gravity, flash and fire points and the viscosity.

CEMENT.—On account of the small amount of construction work done during the year, very little work was done in the testing of cement. 103 tests were made on samples taken from 2,216 barrels of Portland cement and 965 barrels of Natural cement.

WATER PIPE AND SPECIAL CASTINGS.—There were 8,648 tons of 6-inch, 8-inch, 12-inch and 24-inch water pipe inspected, of which 1,725 tons were rejected. These pipes were all subjected to a Hydrostatic Test of 300 lbs. and physical tests were made on test bars from each heat of metal poured. There were also 280 tons of special water pipe castings inspected.

CORPORATION FERRULES.—15,126 ¾-inch, 330 1-inch and 100 1¼-inch Corporation Ferrules were inspected and subjected to a Hydrostatic test of 300 lbs.

CHEMICAL AND PHYSICAL TESTS.—Chemical analyses were made in the laboratory of this division as follows: Three samples of lead, one of limestone, nine of brass, one of steel and two of hydrated lime.

Physical tests were made on four samples of iron and on one of steel.

Inspection work was made on the foundry and machine shop work of the cast iron lining for the two intake shafts of the South West Land Tunnel.

The shop work on the steel shell for suction well and twenty-four cast iron pipe sleeves from 2½ feet to 4 feet in diameter, which were to be placed in the foundation walls of the Roseland pumping station, were inspected. One hundred and forty-seven tons of castings for the engines for this station were tested and inspected.

Two 8-foot by 20-foot filter tanks and fittings, and one iron smoke stack and breeching were inspected for the Rogers Park pumping station.

The accompanying tables show the results of the evaporation tests made at the various pumping stations, and the average results of the tests of all of the samples of coal.

## CHICAGO AVENUE PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 169.9 | 166.0 | 172.0 | 172.8 | 171.2 | 172.2 | 167.6 | 169.2 | 172.2 | 167.1 | 163.9 | 175.0 | 169.9 |
| Feed water temperature | 101.2 | 103.9 | 108.5 | 108.2 | 109.4 | 119.3 | 120.4 | 121.2 | 117.2 | 112.3 | 116.6 | 110.1 | 112.1 |
| Total coal | 21900 | 17100 | 16200 | 13800 | 16800 | 16800 | 17700 | 16800 | 21600 | 23100 | 19500 | 10880 | ....... |
| Total ash | 2660 | 2920 | 1780 | 1720 | 2275 | 1905 | 2565 | 2640 | 3085 | 3420 | 2990 | 1760 | ....... |
| % ash—boiler room | 12.15 | 17.08 | 10.99 | 12.46 | 13.54 | 11.34 | 14.49 | 15.71 | 14.28 | 14.71 | 15.33 | 16.30 | 14.03 |
| % ash—laboratory | 9.36 | 8.89 | 11.23 | 7.93 | 7.30 | 9.36 | 6.62 | 7.70 | 10.06 | 12.35 | 8.52 | 11.96 | 9.27 |
| % moisture | 9.75 | 10.89 | 8.75 | 9.10 | 8.40 | 8.66 | 8.52 | 8.01 | 9.51 | 9.00 | 9.80 | 10.10 | 9.21 |
| Dry coal | 19765 | 15238 | 14783 | 12544 | 15389 | 15345 | 16192 | 15454 | 19546 | 21021 | 17589 | 9709 | ....... |
| Combustible coal | 17105 | 12318 | 13003 | 10824 | 13114 | 13440 | 13627 | 12814 | 16461 | 17601 | 14599 | 7949 | ....... |
| Factor of evaporation | 1.1671 | 1.1638 | 1.1598 | 1.1603 | 1.1588 | 1.1487 | 1.1469 | 1.1463 | 1.1509 | 1.1552 | 1.1503 | 1.1586 | 1.1556 |
| Total water evaporated | 168000 | 126000 | 125000 | 106000 | 123000 | 126000 | 136000 | 133000 | 161000 | 174000 | 147000 | 79000 | ....... |
| Total equivalent evaporation | 196073 | 146639 | 144975 | 122992 | 142532 | 144736 | 155978 | 152458 | 185295 | 201005 | 169094 | 91529 | ....... |
| Equivalent evaporation per hour | 32679 | 24440 | 24163 | 20499 | 23755 | 24123 | 25996 | 25410 | 30883 | 33501 | 28182 | 15255 | ....... |
| Evaporation per lb. coal | 7.671 | 7.368 | 7.716 | 7.681 | 7.321 | 7.500 | 7.684 | 7.917 | 7.454 | 7.532 | 7.538 | 7.315 | 7.558 |
| Evaporation per lb. dry coal | 8.500 | 8.269 | 8.459 | 8.450 | 7.993 | 8.211 | 8.399 | 8.606 | 8.237 | 8.277 | 8.357 | 8.137 | 8.325 |
| Evaporation per lb. combustible coal | 9.822 | 10.229 | 9.613 | 9.793 | 9.379 | 9.375 | 9.980 | 10.379 | 9.781 | 9.886 | 10.069 | 9.938 | 9.854 |
| Equivalent evaporation per lb. coal | 8.953 | 8.575 | 8.949 | 8.912 | 8.484 | 8.615 | 8.812 | 9.075 | 8.578 | 8.702 | 8.671 | 8.475 | 8.733 |
| Equivalent evaporation per lb. dry coal | 9.920 | 9.623 | 9.807 | 9.805 | 9.262 | 9.432 | 9.633 | 9.865 | 9.480 | 9.562 | 9.614 | 9.427 | 9.619 |
| Equival't evaporat'n per lb. comb. coal | 11.463 | 11.904 | 11.149 | 11.353 | 10.869 | 10.769 | 11.446 | 11.898 | 11.256 | 11.420 | 11.583 | 11.515 | 11.386 |
| Cost of coal per ton | 2.60 | 2.60 | 2.60 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | ....... |
| Cost of Evaporat'n 1000 lbs. water—act. | 16.95 | 17.64 | 16.85 | 17.90 | 18.78 | 18.33 | 17.89 | 17.37 | 18.45 | 18.26 | 18.24 | 18.50 | 17.96 |
| Cost of evaporat'n 1000 lbs.—equivalent | 14.52 | 15.16 | 14.53 | 15.43 | 16.21 | 15.96 | 15.60 | 15.15 | 16.03 | 15.80 | 15.86 | 16.22 | 15.62 |
| Cost of evaporat'n 1000 lbs—equiv. dry | 13.10 | 13.51 | 13.26 | 14.02 | 14.85 | 14.58 | 14.27 | 13.94 | 14.50 | 14.38 | 14.30 | 14.59 | 14.11 |
| B. T. U. per lb. coal—commercial | 11622 | 11925 | 11844 | 12247 | 12207 | 11845 | 12381 | 11905 | 11699 | 11655 | 12156 | 11579 | 11922 |
| B. T. U. per lb. coal—absorbed | 8646 | 8280 | 8642 | 8.606 | 8.193 | 8.320 | 8510 | 8764 | 8284 | 8.404 | 8374 | 8184 | 8434 |
| % efficiency of boilers | 74.39 | 69.44 | 72.97 | 70.27 | 67.12 | 70.24 | 68.73 | 73.62 | 70.81 | 72.11 | 68.89 | 70.68 | 70.77 |
| Heating surface—sq. ft | 7100 | 5325 | 5325 | 5325 | 5325 | 5325 | 5325 | 5325 | 7100 | 7100 | 5325 | 3550 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour | 4.603 | 4.590 | 4.538 | 3.850 | 4.461 | 4.530 | 4.882 | 4.772 | 4.350 | 4.718 | 5.292 | 4.297 | 4.574 |
| Grate surface—sq. ft | 184.0 | 138.0 | 138.0 | 138.0 | 138.0 | 138.0 | 138.0 | 138.0 | 184.0 | 184.0 | 138.0 | 92.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 17.9 | 18.4 | 17.9 | 15.1 | 18.6 | 18.5 | 19.6 | 18.7 | 17.7 | 19.0 | 21.2 | 17.6 | 18.4 |
| Horse power—rating | 1000.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 1000.0 | 1000.0 | 750.0 | 500.0 | ....... |
| Horse power—developed | 947.2 | 708.4 | 700.4 | 594.2 | 688.6 | 699.2 | 753.5 | 736.5 | 895.2 | 971.0 | 816.9 | 442.2 | ....... |
| Lbs. coal per H. P. per hour | 3.9 | 4.0 | 3.9 | 3.8 | 4.1 | 4.0 | 3.9 | 3.8 | 4.0 | 4.0 | 4.0 | 4.1 | 4.0 |
| Temperature of superheated steam | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Factor including superheat | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Equiv. evap. dry using S. H. factor | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Kind of coal | Lump | Lump | No. Nut. | No. 1 Nut. | No. 1 Nut. | No. 1 Nut. | No. 1 Nut | Lump | Lump | Lump | Lump | Lump | ....... <br> ....... |
| Kind of furnaces | Haw. | Haw | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | ....... |
|  | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 2 | ....... |
| Kind of boilers | Mar | Mar. | Mar. | Mar. | Mar. | Mar. | Mar. | Mar. | Mar. | Mar. | Mar. | Mar. | ....... |
| Boilers in service—days | 14 | 12 | 14 | 12 | 14 | 18 | 19 | 15 | 19 | 15 | 13 | 23 | ....... |
| Date of test | 20 | 5 | 4 | 14 | 13 | 29 | 20 | 25 | 29 | 5 | 10 | 8 | ....... |

## FOURTEENTH STREET PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 126.8 | 127.5 | 127.8 | 127.4 | 128.0 | 126.9 | 126.3 | 130.6 | 126.5 | 130.0 | 125.9 | 125.6 | 127.4 |
| Feed water temperature | 123.6 | 107.4 | 97.9 | 97.7 | 119.3 | 109.8 | 111.2 | 105.8 | 107.0 | 114.9 | 117.3 | 100.2 | 109.3 |
| Total coal | 17100 | 13200 | 14500 | 14100 | 13100 | 13800 | 13200 | 12000 | 12900 | 15900 | 17700 | 14700 | ....... |
| Total ash | 1606 | 1333 | 1346 | 1331 | 977 | 1185 | 1020 | 1010 | 1016 | 1610 | 1525 | 1350 | ....... |
| % ash—boiler room | 9.39 | 10.10 | 9.28 | 9.44 | 7.46 | 8.59 | 7.73 | 8.42 | 7.83 | 10.13 | 8.62 | 9.18 | 8.85 |
| % ash—laboratory | 7.84 | 9.23 | 9.88 | 8.58 | 7.37 | 7.57 | 10.35 | 8.46 | 8.44 | 8.19 | 10.42 | 7.81 | 8.68 |
| % moisture | 7.14 | 7.33 | 6.63 | 8.00 | 8.34 | 6.93 | 6.77 | 7.33 | 7.05 | 11.00 | 9.92 | 7.41 | 7.82 |
| Dry coal | 15879 | 12232 | 13539 | 12972 | 12007 | 12844 | 12306 | 11120 | 11991 | 14151 | 15944 | 13610 | ....... |
| Combustible coal | 14273 | 10899 | 12193 | 11641 | 11030 | 11659 | 11286 | 10116 | 10981 | 12541 | 14419 | 12261 | ....... |
| Factor of evaporation | 1.1372 | 1.1541 | 1.1640 | 1.1641 | 1.1419 | 1.1516 | 1.1499 | 1.1562 | 1.1543 | 1.1468 | 1.1436 | 1.1612 | 1.1521 |
| Total water evaporated | 133500 | 103500 | 111000 | 111000 | 101200 | 106000 | 102000 | 94000 | 100500 | 123500 | 134000 | 114000 | ....... |
| Total equivalent evaporation | 151816 | 119449 | 129204 | 129215 | 115560 | 122070 | 117290 | 108683 | 116007 | 141630 | 143242 | 132377 | ....... |
| Equivalent evaporation per hour | 25303 | 19908 | 21534 | 21536 | 19260 | 20345 | 19548 | 18114 | 19335 | 23605 | 25540 | 22063 | ....... |
| Evaporation per lb. coal | 7.807 | 7.841 | 7.655 | 7.872 | 7.725 | 7.681 | 7.727 | 7.833 | 7.791 | 7.767 | 7.571 | 7.755 | 7.752 |
| Evaporation per lb. dry coal | 8.407 | 8.461 | 8.199 | 3.557 | 8.428 | 8.253 | 8.289 | 8.453 | 8.381 | 8.727 | 8.404 | 8.376 | 8.411 |
| Evaporation per lb. combustible coal | 9.353 | 9.496 | 9.104 | 9.535 | 9.175 | 9.092 | 9.038 | 9.298 | 9.152 | 9.848 | 9.293 | 9.216 | 9.300 |
| Equivalent evaporation per lb. coal | 8.878 | 9.049 | 8.911 | 9.164 | 8.821 | 8.846 | 8.886 | 9.057 | 8.993 | 8.908 | 8.658 | 9.005 | 8.931 |
| Equivalent evaporation per lb. dry coal | 9.561 | 9.765 | 9.543 | 9.961 | 9.624 | 9.504 | 9.531 | 9.774 | 9.675 | 10.008 | 9.611 | 9.726 | 9.690 |
| Equival't evaporat'n per lb. comb. coal | 10.637 | 10.960 | 10.597 | 11.100 | 10.477 | 10.470 | 10.393 | 10.750 | 10.564 | 11.293 | 10.628 | 10.796 | 10.722 |
| Cost of coal per ton | 2.60 | 2.60 | 2.60 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | ....... |
| Cost of evaporat'g 1000 lbs. water—act. | 16.65 | 16.58 | 16.98 | 16.83 | 17.15 | 17.25 | 17.15 | 16.92 | 17.01 | 17.06 | 17.50 | 17.09 | 17.01 |
| Cost of evaporat'g 1000 lbs.—equivalent | 14.64 | 14.37 | 14.59 | 14.46 | 15.02 | 14.98 | 14.91 | 14.63 | 14.73 | 14.87 | 15.30 | 14.71 | 14.77 |
| Cost of evaporat'g 1000 lbs.—equiv. dry. | 13.60 | 13.31 | 13.62 | 13.30 | 13.77 | 13.94 | 13.90 | 13.56 | 13.72 | 13.24 | 13.79 | 13.62 | 13.61 |
| B. T. U. per lb. coal—commercial | 12312 | 11918 | 12466 | 11976 | 12164 | 12370 | 11885 | 12136 | 12415 | 11805 | 11650 | 11989 | 12091 |
| B. T. U. per lb. coal—absorbed | 8.573 | 8739 | 8605 | 8850 | 8518 | 8.543 | 8581 | 8.746 | 8685 | 8602 | 8361 | 8696 | 8625 |
| % efficiency of boilers | 69.63 | 73.33 | 69.03 | 73.90 | 70.03 | 69.06 | 72.20 | 72.07 | 69.96 | 72.87 | 71.77 | 72.53 | 71.37 |
| Heating surface—sq. ft. | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | 3444 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour. | 7.347 | 5.780 | 6.253 | 6.253 | 5.592 | 5.907 | 5.676 | 5.260 | 5.614 | 6.854 | 7.416 | 6.406 | 6.197 |
| Grate surface—sq. ft. | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 30.1 | 23.1 | 25.6 | 24.6 | 22.7 | 24.3 | 23.3 | 21.1 | 22.7 | 26.8 | 30.2 | 25.8 | 25.0 |
| Horse power—rating | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | ....... |
| Horse power—developed | 733.4 | 577.0 | 624.2 | 624.2 | 558.3 | 589.7 | 566.6 | 525.0 | 500.4 | 684.2 | 740.3 | 639.5 | ....... |
| Lbs. coal per H. P. per hour | 3.9 | 3.8 | 3.9 | 3.8 | 3.9 | 3.9 | 3.9 | 3.8 | 3.8 | 3.9 | 4.0 | 3.8 | 3.9 |
| Temperature of superheated steam | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Factor including superheat | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Equiv. evap. dry using S. H. factor | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Kind of coal | No. 1<br>Nut | No. 1<br>Nut | No. 1<br>Nut | No. 1<br>Nut | Lump | No. 1<br>Nut | No. 1<br>Nut. | Lump | No. 1<br>Nut. | No. 1<br>Nut. | No. 1<br>Nut. | Lump | ....... |
| Kind of furnaces | Haw. | Haw | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | ....... |
| Kind of boilers | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | ....... |
| Boilers in service—days | 7 | 2 | 9 | 4 | 5 | 2 | 3 | 27 | 10 | 2 | 1 | 4 | ....... |
| Date of test | 15 | 25 | 3 | 15 | 11 | 28 | 12 | 6 | 17 | 20 | 29 | 9 | ....... |

## TWENTY-SECOND STREET PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 61.9 | 59.1 | 58.3 | 61.4 | 62.8 | 62.9 | 62.7 | 62.7 | 64.1 | 62.6 | 61.6 | 61.8 | 61.8 |
| Feed water temperature | 125.7 | 135.9 | 131.8 | 136.5 | 134.0 | 126.7 | 131.7 | 133.4 | 136.9 | 134.2 | 131.0 | 130.3 | 132.4 |
| Total coal | 17200 | 18200 | 17150 | 16800 | 16100 | 15750 | 14700 | 15050 | 13650 | 16100 | 17500 | 16100 | ....... |
| Total ash | 2410 | 3000 | 2096 | 2110 | 2440 | 2180 | 2420 | 2319 | 2125 | 2292 | 1865 | 1735 | ....... |
| % ash—boiler room | 14.01 | 16.48 | 12.22 | 12.56 | 15.16 | 13.84 | 16.46 | 15.41 | 15.57 | 14.24 | 10.66 | 10.78 | 13.95 |
| % ash—laboratory | 10.20 | 8.43 | 12.14 | 6.64 | 6.20 | 11.81 | 9.83 | 13.33 | 5.06 | 7.04 | 11.31 | 7.65 | 9.14 |
| % moisture | 11.84 | 11.90 | 12.62 | 12.39 | 10.47 | 10.05 | 9.22 | 9.27 | 11.65 | 13.39 | 11.90 | 12.33 | 11.42 |
| Dry coal | 15164 | 16034 | 14986 | 14718 | 14414 | 14167 | 13345 | 13655 | 12060 | 13944 | 15418 | 14115 | ....... |
| Combustible coal | 12754 | 13034 | 12891 | 12608 | 11974 | 11987 | 10925 | 11336 | 9335 | 11652 | 13553 | 12380 | ....... |
| Factor of evaporation | 1.1209 | 1.1095 | 1.1134 | 1.1096 | 1.1125 | 1.1201 | 1.1149 | 1.1131 | 1.1099 | 1.1123 | 1.1153 | 1.1161 | 1.1140 |
| Total water evaporated | 132158 | 139523 | 130891 | 128651 | 122550 | 121255 | 113316 | 117916 | 108483 | 125653 | 128860 | 118012 | ....... |
| Total equivalent evaporation | 148135 | 154800 | 145177 | 142751 | 136337 | 135818 | 126336 | 131252 | 120405 | 139764 | 143718 | 131713 | ....... |
| Equivalent evaporation per hour | 24689 | 25800 | 24196 | 23792 | 22723 | 22636 | 21066 | 21875 | 20068 | 23294 | 23953 | 21952 | ....... |
| Evaporation per lb. coal | 7.684 | 7.666 | 7.603 | 7.658 | 7.612 | 7.699 | 7.709 | 7.835 | 7.947 | 7.806 | 7.363 | 7.330 | 7.659 |
| Evaporation per lb. dry coal | 8.715 | 8.702 | 8.701 | 8.741 | 8.502 | 8.559 | 8.491 | 8.635 | 8.996 | 9.011 | 8.358 | 8.361 | 8.648 |
| Evaporation per lb. combustible coal | 10.362 | 10.705 | 10.115 | 10.204 | 10.235 | 10.116 | 10.372 | 10.402 | 10.919 | 10.783 | 9.508 | 9.533 | 10.271 |
| Equivalent evaporation per lb. coal | 8.613 | 8.505 | 8.465 | 8.497 | 8.468 | 8.623 | 8.594 | 8.721 | 8.821 | 8.681 | 8.212 | 8.181 | 8.532 |
| Equivalent evaporation per lb. dry coal | 9.769 | 9.654 | 9.687 | 9.699 | 9.459 | 9.581 | 9.467 | 9.612 | 9.984 | 10.023 | 9.321 | 9.331 | 9.632 |
| Equival't evaporat'n per lb. comb. coal | 11.614 | 11.877 | 11.262 | 11.322 | 11.386 | 11.330 | 11.564 | 11.578 | 12.119 | 11.995 | 10.604 | 10.639 | 11.433 |
| Cost of coal per ton | 2.60 | 2.60 | 2.60 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | 2.65 | ....... |
| Cost of evaporat'g 1000 lbs. water—act. | 16.92 | 16.96 | 17.10 | 17.30 | 17.41 | 17.21 | 17.19 | 16.91 | 16.67 | 16.98 | 18.00 | 18.08 | 17.23 |
| Cost of evaporat'g 1000 lbs.—equivalent. | 15.09 | 15.29 | 15.36 | 15.59 | 15.65 | 15.37 | 15.42 | 15.19 | 15.02 | 15.26 | 16.13 | 16.20 | 15.46 |
| Cost of evaporat'g 1000 lbs.—equiv. dry. | 13.31 | 13.47 | 13.42 | 13.66 | 14.01 | 13.83 | 14.09 | 13.78 | 13.27 | 13.22 | 14.22 | 14.20 | 13.70 |
| B. T. U. per lb. coal—commercial | 11336 | 11608 | 11185 | 11428 | 12177 | 11505 | 11800 | 10990 | 11908 | 11711 | 11350 | 11521 | 11542 |
| B. T. U. per lb. coal—absorbed | 8316 | 8213 | 8175 | 8206 | 8178 | 8327 | 8299 | 8422 | 8518 | 8383 | 7930 | 7900 | 8239 |
| % efficiency of boilers | 73.42 | 70.75 | 73.09 | 71.81 | 67.16 | 72.38 | 70.33 | 76.63 | 71.53 | 71.58 | 69.87 | 68.57 | 71.43 |
| Heating surface—sq. ft. | 6460 | 6460 | 6460 | 6460 | 6460 | 6460 | 6460 | 6460 | 6460 | 6460 | 6466 | 6460 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour. | 3.822 | 3.994 | 3.746 | 3.683 | 3.517 | 3.504 | 3.259 | 3.386 | 3.107 | 3.606 | 3.708 | 3.398 | 3.561 |
| Grate surface—sq. ft. | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 19.1 | 19.6 | 18.9 | 18.6 | 18.2 | 17.9 | 16.8 | 17.2 | 15.2 | 17.6 | 19.5 | 17.8 | 18.0 |
| Horse power—rating | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | 500.0 | ....... |
| Horse power—developed | 715.6 | 747.8 | 701.3 | 689.6 | 658.6 | 656.1 | 610.3 | 634.1 | 581.7 | 675.2 | 694.3 | 636.3 | ....... |
| Lbs. coal per H. P. per hour | 4.0 | 4.1 | 4.1 | 4.1 | 4.1 | 4.0 | 4.0 | 4.0 | 3.9 | 4.0 | 4.2 | 4.2 | 4.1 |
| Temperature of superheated steam | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Factor including superheat | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Equiv. evap. dry using S. H. factor | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Kind of coal | No. 1 Nut | No. 1 Nut | No. 1 Nut | L'mp | L'mp | L'mp | Lump | Lump | No. 1 Nut | No. 1. Nut | No. 1 Nut | Lump | ....... |
| Kind of furnaces | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | ....... |
| Kind of boilers | Tub. | Tub. | Tub. | Tub.4 | Tub.4 | Tub.4 | Tub.4 | Tub.4 | Tub.4 | Tub.4 | Tub.4 | Tub.4 | ....... |
| Boilers in service—days | 24 | 13 | 14 | 12 | 17 | 14 | 4 | 10 | 16 | 13 | 21 | 19 | ....... |
| Date of test | 6 | 16 | 9 | 23 | 18 | 8 | 29 | 4 | 23 | 15 | 9 | 22 | ....... |

## CENTRAL PARK AVENUE PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 158.6 | 149.2 | 151.0 | 150.1 | 162.4 | 142.3 | 153.0 | 156.1 | 146.9 | 156.8 | 145.8 | 147.7 | 151.6 |
| Feed water temperature | 114.5 | 120.6 | 110.0 | 119.8 | 115.6 | 120.9 | 123.0 | 108.8 | 119.6 | 118.2 | 119.1 | 91.2 | 115.1 |
| Total coal | 10800 | 10500 | 11300 | 23700 | 20400 | 12600 | 25200 | 30000 | 10800 | 22300 | 27300 | 12300 | ....... |
| Total ash | 1444 | 1493 | 1390 | 3580 | 2275 | 1670 | 2458 | 3551 | 1530 | 1965 | 5195 | 1280 | ....... |
| % ash—boiler room | 13.37 | 14.22 | 12.30 | 15.11 | 11.15 | 13.25 | 9.84 | 11.84 | 14.17 | 8.81 | 19.03 | 10.41 | 13.79 |
| % ash—laboratory | 13.09 | 19.67 | 17.88 | 17.97 | 7.86 | 10.49 | 9.28 | 17.60 | 16.22 | 9.96 | 19.90 | 11.51 | 14.29 |
| % moisture | 10.00 | 11.78 | 12.65 | 12.23 | 12.74 | 12.01 | 12.68 | 8.62 | 12.08 | 14.17 | 9.69 | 15.42 | 12.01 |
| Dry coal | 9720 | 9263 | 9871 | 20801 | 17801 | 11087 | 22005 | 27414 | 9495 | 19064 | 24655 | 10403 | ....... |
| Combustible coal | 8276 | 7770 | 8481 | 17221 | 15526 | 9417 | 19647 | 23863 | 7965 | 17099 | 19460 | 9123 | ....... |
| Factor of evaporation | 1.1517 | 1.1440 | 1.1552 | 1.1449 | 1.1511 | 1.1426 | 1.1421 | 1.1572 | 1.1447 | 1.1475 | 1.1450 | 1.1742 | 1.1500 |
| Total water evaporated | 74900 | 72800 | 75600 | 162400 | 144900 | 84000 | 182700 | 225400 | 75600 | 147000 | 179900 | 78400 | ....... |
| Total equivalent evaporation | 86262 | 83283 | 87333 | 185932 | 166794 | 95978 | 208662 | 260833 | 86539 | 168683 | 205986 | 92057 | ....... |
| Equivalent evaporation per hour | 14377 | 13881 | 14556 | 30989 | 27799 | 15996 | 34777 | 43472 | 14423 | 28114 | 34331 | 15343 | ....... |
| Evaporation per lb. coal | 6.935 | 6.933 | 6.690 | 6.852 | 7.103 | 6.667 | 7.250 | 7.513 | 7.000 | 6.622 | 6.590 | 6.374 | 6.877 |
| Evaporation per lb. dry coal | 7.706 | 7.859 | 7.659 | 7.807 | 8.140 | 7.576 | 8.303 | 8.222 | 7.962 | 7.715 | 7.297 | 7.536 | 7.815 |
| Evaporation per lb. combustible coal | 9.050 | 9.369 | 8.914 | 9.430 | 9.333 | 8.920 | 9.347 | 9.446 | 9.492 | 8.597 | 9.245 | 8.594 | 9.145 |
| Equivalent evaporation per lb. coal | 7.987 | 7.932 | 7.729 | 7.845 | 8.176 | 7.617 | 8.280 | 8.694 | 8.013 | 7.598 | 7.545 | 7.484 | 7.908 |
| Equivalent evaporation per lb. dry coal | 8.875 | 8.991 | 8.847 | 8.939 | 9.370 | 8.657 | 9.482 | 9.515 | 9.114 | 8.853 | 8.355 | 8.849 | 8.987 |
| Equival't evaporat'n per lb. comb. coal | 11.423 | 10.719 | 10.297 | 10.797 | 10.743 | 10.192 | 10.675 | 10.930 | 10.865 | 9.865 | 10.585 | 10.091 | 10.599 |
| Cost of coal per ton | 2.20 | 2.20 | 2.20 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | ....... |
| Cost of evaporat'g 1000 lbs. water—act. | 15.86 | 15.87 | 16.44 | 16.78 | 16.19 | 17.25 | 15.86 | 15.31 | 16.43 | 17.37 | 17.45 | 18.04 | 16.57 |
| Cost of evaporat'g 1000 lbs.—equivalent. | 13.77 | 13.87 | 14.23 | 14.66 | 14.07 | 15.10 | 13.89 | 13.23 | 14.35 | 15.14 | 15.24 | 15.37 | 14.41 |
| Cost of evaporat'g 1000 lbs.—equiv. dry. | 12.39 | 12.23 | 12.43 | 12.86 | 12.27 | 13.28 | 12.13 | 12.09 | 12.62 | 12.99 | 13.76 | 13.00 | 12.67 |
| B. T. U. per lb. coal—commercial | 11154 | 10200 | 10347 | 10129 | 11503 | 11258 | 11286 | 10752 | 10600 | 11152 | 10505 | 10704 | 10759 |
| B. T. U. per lb. coal—absorbed | 7713 | 7660 | 7464 | 7576 | 7896 | 7356 | 7996 | 8396 | 7738 | 7337 | 7298 | 7227 | 7367 |
| % efficiency of boilers | 69.15 | 75.10 | 72.14 | 74.80 | 68.64 | 65.32 | 70.85 | 78.09 | 73.00 | 65.79 | 69.66 | 67.52 | 70.81 |
| Heating surface—sq. ft. | 2804 | 3150 | 3150 | 5608 | 5608 | 3150 | 7010 | 7010 | 3150 | 5608 | 5608 | 3150 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour. | 5.127 | 4.089 | 4.621 | 5.526 | 4.957 | 5.078 | 4.961 | 6.201 | 4.579 | 5.013 | 6.122 | 4.871 | 5095 |
| Grate surface—sq. ft. | 70.0 | 70.0 | 70.0 | 140.0 | 140.0 | 70.0 | 175.0 | 175.0 | 70.0 | 140.0 | 140.0 | 70.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 23.1 | 22.1 | 23.5 | 24.8 | 21.2 | 26.4 | 21.0 | 26.1 | 22.6 | 22.7 | 29.4 | 24.8 | 23.9 |
| Horse power—rating | 450.0 | 450.0 | 450.0 | 900.0 | 900.0 | 450.0 | 1125.0 | 1125.0 | 450.0 | 900.0 | 900.0 | 450.0 | ....... |
| Horse power—developed | 416.7 | 402.3 | 421.9 | 898.2 | 805.8 | 463.7 | 1008.0 | 1260.0 | 418.1 | 814.9 | 936.1 | 444.7 | ....... |
| Lbs. coal per H. P. per hour | 4.3 | 4.3 | 4.5 | 4.4 | 4.2 | 4.5 | 4.2 | 4.0 | 4.3 | 4.5 | 4.6 | 4.6 | 4.4 |
| Temperature of superheated steam | 512.5 | 556.3 | 558.8 | 586.8 | 506.2 | 562.4 | 512.2 | 526.3 | 547.0 | 481.4 | 560.6 | 549.4 | 540.8 |
| Factor including superheat | 1.2227 | 1.2389 | 1.2510 | 1.2549 | 1.2181 | 1.2423 | 1.2291 | 1.2357 | 1.2356 | 1.2036 | 1.2429 | 1.2661 | 1.2367 |
| Equiv. evap. dry using S. H. factor | 9.422 | 9.737 | 9.581 | 9.797 | 9.915 | 9.412 | 10.205 | 10.160 | 9.838 | 9.286 | 9.069 | 9.541 | 9.664 |
| Kind of coal | Lump | No. 1<br>Nut. | No. 1<br>Nut. | No. 1<br>Nut. | Lump | No. 1<br>Nut. | L'mp | L'mp | L'mp | No. 1<br>Nut. | No 2<br>Nut. | No. 1<br>Nut. | .......<br>....... |
| Kind of furnaces | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw | Haw. | Haw | Haw. | ....... |
| Kind of boilers | 2<br>Mar. | 2<br>Mar. | 2<br>Mar. | 4<br>Mar. | 4<br>Mar. | 2<br>Mar. | 5<br>Mar. | 5<br>Mar. | 2<br>Mar. | 4<br>Mar. | 4<br>Mar. | 2<br>Mar. | .......<br>....... |
| Boilers in service—days | 1 | 2 | 20 | 25 | 13 | 11 | 29 | 25 | 15 | 17 | 20 | 3 | ....... |
| Date of test | 22 | 24 | 16 | 20 | 5 | 3 | 28 | 9 | 15 | 27 | 18 | 21 | ....... |

## SPRINGFIELD AVENUE PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 156.6 | 151.8 | 154.7 | 149.4 | 154.7 | 155.3 | 148.7 | 152.7 | 150.4 | 158.4 | 147.3 | 150.6 | 152.6 |
| Feed water temperature | 102.6 | 102.8 | 109.7 | 101.8 | 101.2 | 117.5 | 120.1 | 108.9 | 120.2 | 110.1 | 100.8 | 107.8 | 108.6 |
| Total coal | 23700 | 25800 | 20400 | 28500 | 26400 | 21000 | 27300 | 27300 | 28200 | 22200 | 27600 | 22500 | ....... |
| Total ash | 3140 | 4463 | 4041 | 6627 | 3860 | 3596 | 5047 | 4260 | 5470 | 3245 | 6495 | 3688 | ....... |
| % ash—boiler room | 13.24 | 17.30 | 19.81 | 23.25 | 14.62 | 17.12 | 18.49 | 15.60 | 19.40 | 14.62 | 23.63 | 16.39 | 17.79 |
| % ash—laboratory | 16.10 | 13.79 | 20.03 | 13.98 | 11.10 | 14.19 | 11.16 | 14.12 | 11.29 | 10.30 | 15.56 | 10.25 | 13.49 |
| % moisture | 11.00 | 10.77 | 11.84 | 11.06 | 12.30 | 10.76 | 9.45 | 9.95 | 12.68 | 11.36 | 13.17 | 13.28 | 11.47 |
| Dry coal | 21093 | 23021 | 17985 | 25348 | 23153 | 18740 | 24720 | 24584 | 24624 | 1978 | 23965 | 19512 | ....... |
| Combustible coal | 17953 | 18558 | 13944 | 18721 | 19293 | 15145 | 19673 | 20324 | 19154 | 16433 | 17470 | 15824 | ....... |
| Factor of evaporation | 1.1637 | 1.1628 | 1.1561 | 1.1635 | 1.1649 | 1.1481 | 1.1444 | 1.1566 | 1.1446 | 1.1562 | 1.1642 | 1.1574 | 1.1569 |
| Total water evaporated | 162400 | 178500 | 137200 | 190400 | 175000 | 144900 | 182000 | 196700 | 194600 | 158200 | 182700 | 151200 | ....... |
| Total equivalent evaporation | 188985 | 207560 | 158617 | 221530 | 203858 | 166360 | 208281 | 227503 | 222739 | 182911 | 212699 | 174999 | ....... |
| Equivalent evaporation per hour | 31497 | 34593 | 21436 | 36922 | 33976 | 27727 | 34714 | 37917 | 37123 | 30485 | 35450 | 29167 | ....... |
| Evaporation per lb. coal | 6.852 | 6.919 | 6.725 | 6.688 | 6.629 | 6.900 | 6.667 | 7.205 | 6.901 | 7.126 | 6.620 | 6.720 | 6.829 |
| Evaporation per lb. dry coal | 7.699 | 7.754 | 7.629 | 7.511 | 7.515 | 7.732 | 7.362 | 8.001 | 7.903 | 8.039 | 7.624 | 7.749 | 7.710 |
| Evaporation per lb. combustible coal | 9.046 | 9.618 | 9.839 | 10.170 | 9.071 | 9.568 | 9.251 | 9.678 | 10.160 | 9.627 | 10.458 | 9.555 | 9.670 |
| Equivalent evaporation per lb. coal | 7.974 | 8.045 | 7.775 | 7.773 | 7.721 | 7.922 | 7.629 | 8.333 | 7.899 | 8.239 | 7.706 | 7.778 | 7.900 |
| Equivalent evaporation per lb. dry coal | 8.960 | 9.012 | 8.819 | 8.740 | 8.805 | 8.877 | 8.426 | 9.250 | 9.046 | 9.296 | 8.875 | 8.969 | 8.923 |
| Equival't evaporat'n per lb. comb. coal | 10.527 | 11.184 | 11.375 | 11.833 | 10.566 | 10.984 | 10.587 | 11.144 | 11.629 | 11.131 | 12.175 | 11.069 | 11.183 |
| Cost of coal per ton | 2.20 | 2.20 | 2.20 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | ....... |
| Cost of evaporat'g 1000 lbs. water—act. | 16.05 | 15.90 | 16.36 | 17.19 | 17.34 | 16.67 | 17.25 | 15.96 | 16.66 | 16.14 | 17.37 | 17.11 | 16.67 |
| Cost of evaporat'g 1000 lbs.—equivalent | 13.79 | 13.67 | 14.15 | 14.79 | 14.89 | 14.52 | 15.07 | 13.80 | 14.56 | 13.96 | 14.92 | 14.79 | 14.41 |
| Cost of evaporat'g 1000 lbs.—equiv. dry | 12.28 | 12.21 | 12.47 | 13.16 | 13.06 | 12.95 | 13.65 | 12.43 | 12.71 | 12.37 | 12.96 | 12.82 | 12.76 |
| B. T. U. per lb. coal—commercial | 11072 | 11212 | 10026 | 10864 | 11129 | 10982 | 11283 | 11102 | 11005 | 11563 | 10518 | 11352 | 11009 |
| B. T. U. per lb. coal—absorbed | 7700 | 7769 | 7508 | 7506 | 7456 | 7650 | 7367 | 8047 | 7628 | 7956 | 7442 | 7511 | 7628 |
| % efficiency of boilers | 69.54 | 69.29 | 74.85 | 69.09 | 67.00 | 69.66 | 65.29 | 72.48 | 69.31 | 68.81 | 70.76 | 66.16 | 69.35 |
| Heating surface—sq. ft. | 5608 | 5954 | 4206 | 5954 | 5954 | 4206 | 5954 | 5608 | 5954 | 4206 | 5954 | 4379 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour | 5.616 | 5.810 | 6.285 | 6.201 | 5.706 | 6.592 | 5.830 | 6.761 | 6.235 | 7.248 | 5.954 | 6.661 | 6.242 |
| Grate surface—sq. ft. | 140.0 | 140.0 | 105.0 | 140.0 | 140.0 | 105.0 | 140.0 | 140.0 | 140.0 | 105.0 | 140.0 | 105.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 25.1 | 27.4 | 28.5 | 30.2 | 27.6 | 29.7 | 29.4 | 29.3 | 29.3 | 31.2 | 28.5 | 31.0 | 28.9 |
| Horse power—rating | 900.0 | 900.0 | 675.0 | 900.0 | 900.0 | 675.0 | 900.0 | 900.0 | 900.0 | 675.0 | 900.0 | 675.0 | ....... |
| Horse power—developed | 913.0 | 1002.7 | 766.3 | 1070.2 | 984.8 | 803.7 | 1006.2 | 1099.0 | 1076.0 | 883.6 | 1027.5 | 845.4 | ....... |
| Lbs. coal per H. P. per hour | 4.3 | 4.3 | 4.4 | 4.4 | 4.4 | 4.4 | 4.5 | 4.1 | 4.4 | 4.2 | 4.5 | 4.4 | 4.4 |
| Temperature of superheated steam | 541.0 | 521.0 | 497.0 | 511.1 | 501.0 | 483.4 | 498.3 | 491.2 | 500.5 | 485.4 | 498.2 | 528.4 | 504.7 |
| Factor including superheat | 1.2493 | 1.2396 | 1.2203 | 1.2359 | 1.2311 | 1.2054 | 1.2107 | 1.2184 | 1.2117 | 1.2138 | 1.2307 | 1.2382 | 1.2254 |
| Equiv. evap. dry using S. H. factor | 9.618 | 9.612 | 9.310 | 9.283 | 9.252 | 9.320 | 8.913 | 9.748 | 9.576 | 9.758 | 9.383 | 9.595 | 9.447 |
| Kind of coal | Lump | No.1 Nut | Lump | Lump | No.1 Nut | Lump | No.1 Nut | Lump | No.1 Nut | No.1 Nut | Lump | No.1 Nut | ....... |
| Kind of furnaces | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | ....... |
| Kind of boilers | 4 Mar. | 4 Mar. | 3 Mar. | 4 Mar. | 4 Mar. | 3 Mar. | 4 Mar. | 4 Mar. | 4 Mar. | 3 Mar. | 4 Mar. | 3 Mar. | ....... |
| Boilers in service—days | 16 | 15 | 12 | 7 | 16 | 14 | 31 | 2 | 8 | 7 | 10 | 1 | ....... |
| Date of test | 13 | 17 | 18 | 28 | 7 | 15 | 28 | 5 | 10 | 14 | 19 | 30 | ....... |

## HARRISON STREET PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Steam pressure** | 149.4 | 150.2 | 150.7 | 147.2 | 146.8 | 146.0 | 142.8 | 141.1 | 133.8 | 140.2 | 138.9 | 130.8 | 143.1 |
| **Feed water temperature** | 137.2 | 149.5 | 162.0 | 152.3 | 133.8 | 148.8 | 135.3 | 138.3 | 138.4 | 138.3 | 128.8 | 139.1 | 141.8 |
| **Total coal** | 12500 | 12100 | 11600 | 12100 | 11100 | 11200 | 12300 | 11900 | 11100 | 7200 | 11250 | 12300 | ....... |
| **Total ash** | 2220 | 2265 | 2190 | 2240 | 2100 | 2250 | 2200 | 2550 | 3025 | 1030 | 1775 | 2175 | ....... |
| % ash—boiler room | 17.76 | 18.72 | 18.88 | 18.51 | 18.92 | 20.09 | 17.89 | 21.43 | 18.24 | 14.31 | 15.78 | 17.60 | 18.18 |
| % ash—laboratory | 21.23 | 20.16 | 23.18 | 19.30 | 16.24 | 19.49 | 18.73 | 19.26 | 15.47 | 12.49 | 13.29 | 16.47 | 17.94 |
| % moisture | 10.94 | 13.25 | 13.52 | 14.28 | 11.27 | 12.25 | 11.86 | 11.32 | 15.37 | 14.63 | 13.64 | 14.35 | 13.06 |
| Dry coal | 11133 | 10497 | 10032 | 10372 | 9849 | 9828 | 10841 | 10553 | 9394 | 6147 | 9715 | 10535 | ....... |
| Combustible coal | 8913 | 8232 | 7842 | 8132 | 7749 | 7578 | 8641 | 8003 | 7369 | 5117 | 7940 | 8360 | ....... |
| Factor of evaporation | 1.1268 | 1.1142 | 1.1013 | 1.1108 | 1.1299 | 1.1141 | 1.1277 | 1.1244 | 1.1231 | 1.1242 | 1.1338 | 1.1218 | 1.1210 |
| Total water evaporated | 83200 | 78800 | 77600 | 82400 | 74000 | 75600 | 79600 | 75200 | 76800 | 48400 | 73600 | 80400 | ....... |
| Total equivalent evaporation | 93750 | 87799 | 85461 | 91530 | 83612 | 84226 | 89765 | 84555 | 86254 | 54411 | 83448 | 90193 | ....... |
| Equivalent evaporation per hour | 15625 | 14633 | 14243 | 15255 | 13935 | 14038 | 14961 | 14093 | 14376 | 9068 | 13908 | 15032 | ....... |
| Evaporation per lb. coal | 6.656 | 6.512 | 6.690 | 6.810 | 6.667 | 6.750 | 6.472 | 6.319 | 6.919 | 6.722 | 6.542 | 6.537 | 6.633 |
| Evaporation per lb. dry coal | 7.473 | 7.507 | 7.735 | 7.944 | 7.513 | 7.692 | 7.343 | 7.126 | 8.175 | 7.874 | 7.576 | 7.632 | 7.633 |
| Evaporation per lb. combustible coal | 9.335 | 9.572 | 9.896 | 10.133 | 9.550 | 9.976 | 9.212 | 9.396 | 10.422 | 9.459 | 9.270 | 9.617 | 9.653 |
| Equivalent evaporation per lb. coal | 7.500 | 7.256 | 7.367 | 7.564 | 7.533 | 7.520 | 7.298 | 7.105 | 7.771 | 7.557 | 7.418 | 7.333 | 7.435 |
| Equivalent evaporation per lb. dry coal | 8.421 | 8.364 | 8.519 | 8.825 | 8.489 | 8.570 | 8.280 | 8.012 | 9.182 | 8.852 | 8.590 | 8.561 | 8.555 |
| Equival't evaporat'n per lb. comb. coal | 10.518 | 10.666 | 10.896 | 11.256 | 10.730 | 11.115 | 10.388 | 10.565 | 11.705 | 10.633 | 10.510 | 10.789 | 10.819 |
| Cost of coal per ton | 2.08 | 2.08 | 2.08 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | ....... |
| Cost of evaporat'g 1000 lbs. water—act. | 15.63 | 15.97 | 15.55 | 16.52 | 16.87 | 16.67 | 17.38 | 17.80 | 16.26 | 16.74 | 17.20 | 17.21 | 16.65 |
| Cost of evaporat'g 1000 lbs.—equivalent | 13.87 | 14.33 | 14.12 | 14.87 | 14.93 | 14.96 | 15.42 | 15.83 | 14.48 | 14.89 | 15.17 | 15.34 | 14.85 |
| Cost of evaporat'g 1000 lbs.—equiv. dry | 12.35 | 12.43 | 12.21 | 12.75 | 13.25 | 13.13 | 13.59 | 14.04 | 12.25 | 12.71 | 13.10 | 13.14 | 12.91 |
| B. T. U. per lb. coal—commercial | 10491 | 10183 | 9464 | 9680 | 10648 | 9825 | 10170 | 9602 | 10035 | 10489 | 10820 | 10254 | 10138 |
| B. T. U. per lb. coal—absorbed | 7243 | 7006 | 7114 | 7305 | 7275 | 7262 | 7048 | 6861 | 7504 | 7298 | 7164 | 7081 | 7180 |
| % efficiency of boilers | 69.04 | 68.80 | 75.17 | 75.46 | 68.32 | 73.91 | 69.30 | 71.45 | 74.78 | 69.58 | 66.21 | 69.06 | 70.92 |
| Heating surface—sq. ft. | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour | 4.596 | 4.304 | 4.189 | 4.487 | 4.099 | 4.129 | 4.400 | 4.145 | 4.228 | 2.667 | 4.090 | 4.421 | 4.146 |
| Grate surface—sq. ft. | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 25.8 | 24.3 | 23.2 | 24.0 | 22.8 | 22.8 | 25.1 | 24.4 | 21.7 | 14.2 | 22.5 | 24.4 | 22.9 |
| Horse power—rating | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | ....... |
| Horse power—developed | 452.9 | 424.1 | 412.8 | 442.2 | 403.9 | 406.9 | 433.6 | 408.5 | 416.7 | 262.8 | 403.1 | 435.7 | ....... |
| Lbs. coal per H. P. per hour | 4.6 | 4.8 | 4.7 | 4.6 | 4.6 | 4.6 | 4.7 | 4.9 | 4.4 | 4.6 | 4.7 | 4.7 | 4.7 |
| Temperature of superheated steam | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Factor including superheat | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Equiv. evap. dry using S. H. factor | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Kind of coal | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | ....... |
| Kind of furnaces | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | ....... |
| Kind of boilers | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | ....... |
| Boilers in service—days | 3 | 29 | 5 | 42 | 40 | 5 | 43 | 2 | 19 | 3 | 15 | 2 | ....... |
| Date of test | 7 | 3 | 2 | 1 | 20 | 2 | 8 | 3 | 22 | 29 | 11 | 15 | ....... |

## LAKE VIEW PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Month | Jan. | Feb. | Mar. | Apr. | May | June. | July | Aug. | Sept | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 93.0 | 93.3 | 93.1 | 93.5 | 95.3 | 92.3 | 94.2 | 96.9 | 94.4 | 93.3 | 93.5 | 94.2 | 93.9 |
| Feed water temperature | 146.9 | 149.1 | 142.2 | 137.9 | 126.7 | 127.4 | 129.1 | 145.4 | 127.7 | 138.5 | 128.4 | 134.7 | 136.2 |
| Total coal | 14700 | 15760 | 15800 | 15025 | 13530 | 16300 | 15600 | 16700 | 17600 | 15000 | 15400 | 15650 | ....... |
| Total ash | 1917 | 1780 | 1565 | 1945 | 1530 | 1655 | 1885 | 2170 | 1635 | 1670 | 3210 | 2210 | ....... |
| % ash—boiler room | 13.04 | 11.29 | 9.90 | 12.94 | 11.31 | 10.15 | 12.08 | 12.99 | 9.29 | 11.13 | 20.84 | 14.12 | 12.42 |
| % ash—laboratory | 14.66 | 17.15 | 16.31 | 13.25 | 11.16 | 9.99 | 12.27 | 12.75 | 16.97 | 7.27 | 11.92 | 12.58 | 12.52 |
| % moisture | 11.30 | 13.85 | 13.62 | 13.42 | 11.97 | 12.28 | 14.24 | 17.10 | 9.96 | 8.17 | ....... | 13.75 | 13.24 |
| Dry coal | 13039 | 13577 | 13648 | 13017 | 11910 | 14208 | 13686 | 14571 | 14613 | 13910 | 13564 | 13681 | ....... |
| Combustible coal | 11122 | 11797 | 12083 | 11072 | 10580 | 12543 | 11801 | 12401 | 12978 | 11240 | 10354 | 11471 | ....... |
| Factor of evaporation | 1.1066 | 1.1043 | 1.1114 | 1.1160 | 1.1280 | 1.1266 | 1.1253 | 1.1089 | 1.1267 | 1.1153 | 1.1278 | 1.1195 | 1.1179 |
| Total water evaporated | 110600 | 117600 | 116900 | 111300 | 100800 | 117600 | 120400 | 131300 | 123900 | 116200 | 115500 | 109200 | ....... |
| Total equivalent evaporation | 122390 | 129866 | 129923 | 124211 | 113702 | 132488 | 135486 | 145599 | 139598 | 129598 | 130030 | 122249 | ....... |
| Equivalent evaporation per hour | 20398 | 21614 | 21654 | 20702 | 18950 | 22081 | 22581 | 24267 | 23266 | 21600 | 21672 | 20375 | ....... |
| Evaporation per lb. coal | 7.524 | 7.462 | 7.399 | 7.403 | 7.450 | 7.215 | 7.718 | 7.862 | 7.040 | 7.747 | 7.500 | 6.978 | 7.442 |
| Evaporation per lb. dry coal | 8.482 | 8.662 | 8.565 | 8.550 | 8.463 | 8.225 | 8.797 | 9.011 | 8.479 | 8.354 | 8.515 | 7.982 | 8.507 |
| Evaporation per lb. combustible coal | 9.944 | 9.969 | 9.675 | 10.052 | 9.711 | 9.302 | 10.203 | 10.580 | 9.547 | 10.338 | 11.155 | 9.520 | 10.000 |
| Equivalent evaporation per lb. coal | 8.326 | 8.240 | 8.223 | 8.261 | 8.404 | 8.128 | 8.685 | 8.719 | 7.932 | 8.640 | 8.444 | 7.811 | 8.318 |
| Equivalent evaporation per lb. dry coal | 9.386 | 9.565 | 9.520 | 9.542 | 9.537 | 9.266 | 9.900 | 9.992 | 9.553 | 9.317 | 9.586 | 8.936 | 9.508 |
| Equival't evaporat'n per lb. comb. coal | 11.004 | 11.008 | 10.753 | 11.218 | 10.594 | 10.479 | 11.481 | 11.741 | 10.757 | 11.530 | 12.558 | 10.657 | 11.148 |
| Cost of coal per ton | 3.05 | 3.05 | 3.05 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | ....... |
| Cost of evaporat'g 1000 water—act | 20.27 | 20.44 | 20.61 | 20.26 | 20.13 | 20.79 | 19.44 | 19.08 | 21.31 | 19.36 | 20.00 | 21.50 | 20.27 |
| Cost of evaporat'g 1000 lbs.—equivalent | 18.32 | 18.51 | 18.55 | 18.16 | 17.85 | 18.45 | 17.27 | 17.20 | 18.92 | 17.36 | 17.76 | 19.20 | 18.13 |
| Cost of evaporat'g 1000 lbs.—equiv. dry | 16.25 | 15.94 | 16.02 | 15.72 | 15.71 | 16.19 | 15.15 | 15.01 | 15.70 | 16.10 | 15.65 | 16.79 | 15.85 |
| B. T. U. per lb. coal—commercial | 10896 | 10567 | 10229 | 10666 | 11036 | 11252 | 10973 | 10444 | 10360 | 12081 | ....... | 10629 | 10830 |
| B. T. U. per lb. coal—absorbed | 8040 | 7957 | 7941 | 7978 | 8114 | 7849 | 8387 | 8420 | 7660 | 8344 | 8154 | 7543 | 8032 |
| % efficiency of boilers | 73.79 | 75.30 | 77.63 | 74.80 | 73.54 | 69.76 | 76.43 | 80.62 | 73.94 | 69.07 | ....... | 70.97 | 74.17 |
| Heating surface—sq. ft. | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | 5340 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour | 3.820 | 4.053 | 4.055 | 3.877 | 3.550 | 4.135 | 4.229 | 4.544 | 4.357 | 4.045 | 4.058 | 3.816 | 4.015 |
| Grate surface—sq. ft. | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | 127.5 | ....... |
| Dry coal per sq. ft. G. S. per hour | 17.0 | 17.7 | 17.8 | 17.0 | 15.6 | 18.7 | 17.9 | 19.0 | 19.1 | 18.2 | 17.7 | 17.9 | 17.8 |
| Horse power—rating | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 | ....... |
| Horse power—developed | 591.0 | 627.4 | 627.7 | 600.1 | 549.3 | 640.0 | 654.5 | 703.4 | 674.4 | 626.1 | 628.2 | 590.6 | ....... |
| Lbs. coal per H. P. per hour | 3.0 | 4.2 | 4.2 | 4.2 | 4.1 | 4.2 | 4.0 | 4.0 | 4.3 | 4.0 | 4.0 | 4.4 | 4.1 |
| Temperature of superheated steam | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Factor including superheat | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Equiv. evap. dry using S. H. factor | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Kind of coal | No. 1<br>Nut | No. 1<br>Nut | No. 1<br>Nut | Lump | Lump | No. 2<br>Nut | Lump | Lump | No. 1<br>Nut | No. 1<br>Nut | No. 2<br>Nut | Lump | ....... |
| Kind of furnaces | Haw. | Haw. | Haw | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | Haw. | ....... |
| Kind of boilers | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | 3<br>Mar. | ....... |
| Boilers in service—days | 12 | 14 | 15 | 14 | 8 | 14 | 14 | 11 | 7 | 11 | 30 | 12 | ....... |
| Date of test | 29 | 10 | 23 | 27 | 25 | 17 | 15 | 24 | 28 | 26 | 30 | 16 | ....... |

## SIXTY-EIGHTH STREET PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Mine Run and Lump Contracts.<br>Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 73.4 | 74.0 | 74.7 | 73.1 | 71.7 | 73.1 | 73.7 | 73.6 | 75.0 | 75.5 | 74.6 | 79.4 | 74.3 |
| Feed water temperature | 61.3 | 92.1 | 94.8 | 80.8 | 91.1 | 110.0 | 79.8 | 101.8 | 101.7 | 90.3 | 84.6 | 85.5 | 89.7 |
| Total coal | 7150 | 6300 | 6025 | 5510 | 4875 | 6500 | 5900 | 5260 | 7000 | 6115 | 6670 | 5425 | ...... |
| Total ash | 1079 | 871 | 908 | 988 | 910 | 945 | 825 | 915 | 1065 | 1100 | 1196 | 1025 | ...... |
| % ash—boiler room | 15.09 | 13.83 | 15.07 | 17.93 | 18.67 | 14.54 | 13.98 | 15.38 | 15.21 | 17.99 | 17.93 | 18.89 | 16.21 |
| % ash—laboratory | 14.27 | 15.35 | 15.83 | 14.07 | 12.70 | 14.05 | 14.26 | 15.51 | 13.72 | 10.25 | 11.96 | 12.23 | 13.68 |
| % moisture | 9.55 | 11.46 | 10.14 | 8.98 | 8.96 | 9.36 | 8.98 | 9.32 | 9.71 | 9.74 | 10.06 | 8.68 | 9.58 |
| Dry coal | 6467 | 5578 | 5414 | 5015 | 4439 | 5892 | 5370 | 5395 | 6320 | 5519 | 6000 | 4954 | ...... |
| Combustible coal | 5388 | 4707 | 4506 | 4027 | 3529 | 4947 | 4545 | 4480 | 5255 | 4419 | 4804 | 3929 | ...... |
| Factor of evaporation | 1.1906 | 1.1589 | 1.1563 | 1.1704 | 1.1593 | 1.1401 | 1.1716 | 1.1457 | 1.1492 | 1.1611 | 1.1668 | 1.1659 | 1.1613 |
| Total water evaporated | 43400 | 42000 | 38500 | 37100 | 35000 | 44100 | 39900 | 40600 | 49000 | 42000 | 45020 | 38500 | ...... |
| Total equivalent evaporation | 51672 | 48674 | 44518 | 43422 | 40576 | 50278 | 46747 | 46515 | 56311 | 48766 | 52529 | 44887 | ...... |
| Equivalent evaporation per hour | 8612 | 6112 | 7420 | 7237 | 6763 | 8380 | 7791 | 7753 | 9385 | 8128 | 8755 | 7481 | ...... |
| Evaporation per lb. coal | 6.070 | 6.667 | 6.390 | 6.733 | 7.179 | 6.785 | 6.763 | 6.824 | 7.000 | 6.868 | 6.750 | 7.097 | 6.761 |
| Evaporation per lb. dry coal | 6.711 | 7.530 | 7.111 | 7.398 | 7.885 | 7.485 | 7.430 | 7.525 | 7.753 | 7.610 | 7.503 | 7.771 | 7.476 |
| Evaporation per lb. combustible coal | 8.055 | 8.923 | 8.544 | 9.213 | 9.918 | 8.914 | 8.779 | 9.063 | 9.324 | 9.504 | 9.371 | 9.799 | 9.117 |
| Equivalent evaporation per lb. coal | 7.227 | 7.726 | 7.389 | 7.881 | 8.323 | 7.735 | 7.923 | 7.818 | 8.044 | 7.975 | 7.875 | 8.274 | 7.849 |
| Equivalent evaporation per lb. dry coal | 7.990 | 8.726 | 8.223 | 8.658 | 9.141 | 8.535 | 8.705 | 8.622 | 8.910 | 8.836 | 8.755 | 9.061 | 8.680 |
| Equival't evaporat'n per lb. comb. coal | 9.590 | 10.341 | 9.880 | 10.783 | 11.498 | 10.163 | 10.285 | 10.383 | 10.716 | 11.036 | 10.934 | 11.425 | 10.586 |
| Cost of coal per ton | 2.17 | 2.17 | 2.17 | 2.19 | 2.19 | 2.19 | 2.19 | 2.19 | 2.19 | 2.19 | 2.19 | 2.19 | ...... |
| Cost of evaporat'g 1000 lbs. water—act. | 17.87 | 16.27 | 16.98 | 16.26 | 15.25 | 16.14 | 16.19 | 16.05 | 15.64 | 15.94 | 16.22 | 15.43 | 16.19 |
| Cost of evaporat'g 1000 lbs.—equivalent. | 15.01 | 14.04 | 14.68 | 13.89 | 13.16 | 14.16 | 13.82 | 14.01 | 13.61 | 13.73 | 13.90 | 13.23 | 13.91 |
| Cost of evaporat'g 1000 lbs.—equiv. dry. | 13.58 | 12.43 | 13.19 | 12.65 | 11.98 | 12.83 | 12.58 | 12.70 | 12.29 | 12.39 | 12.51 | 12.08 | 12.60 |
| B. T. U. per lb. coal—commercial | 11138 | 10716 | 10648 | 11048 | 11119 | 11036 | 11138 | 10756 | 10714 | 11840 | 11694 | 11373 | 11102 |
| B. T. U. per lb. coal—absorbed | 6979 | 7461 | 7136 | 7611 | 8038 | 7469 | 7651 | 7550 | 7768 | 7701 | 7605 | 7990 | 7580 |
| % efficiency of boilers | 62.66 | 69.62 | 67.02 | 68.89 | 72.29 | 67.68 | 68.69 | 70.19 | 72.50 | 65.04 | 65.03 | 70.25 | 68.32 |
| Heating surface—sq. ft. | 2580 | 2580 | 2580 | 2580 | 2580 | 2580 | 2580 | 2580 | 2580 | 2150 | 2150 | 2150 | ...... |
| Equiv. evap. per sq. ft. H. S. per hour. | 3.348 | 2.369 | 2.876 | 2.805 | 2.621 | 3.248 | 3.020 | 3.005 | 3.638 | 3.780 | 4.072 | 3.480 | 3.188 |
| Grate surface—sq. ft. | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | ...... |
| Dry coal per sq. ft. G. S. per hour | 24.0 | 20.7 | 20.1 | 18.6 | 16.4 | 21.8 | 19.9 | 20.0 | 23.4 | 20.4 | 22.2 | 18.3 | 20.5 |
| Horse power—rating | 200.0 | 200.0 | 200.0 | 200.0 | 170.0 | 200.0 | 200.0 | 200.0 | 200.0 | 170.0 | 170.0 | 170.0 | ...... |
| Horse power—developed | 249.6 | 177.1 | 215.1 | 209.8 | 196.0 | 242.9 | 225.8 | 224.7 | 272.0 | 235.6 | 253.8 | 216.8 | ...... |
| Lbs. coal per H. P. per hour | 4.9 | 5.9 | 4.7 | 4.4 | 4.1 | 4.5 | 4.4 | 4.4 | 4.3 | 4.3 | 4.4 | 4.2 | 4.5 |
| Temperature of superheated steam | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Factor including superheat | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Equiv. evap. dry using S. H. factor | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Kind of coal | Mine Run | Mine Run | Mine Run | Lump | Lump | Lump | Lump | Lump | Lump | Lump | Lump | Lump | ...... |
| Kind of furnaces | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | Ordinary | ...... |
| Kind of boilers | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | 2 Tub. | ...... |
| Boilers in service—days | 5 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | 2 | 1 | 1 | ...... |
| Date of test | 26 | 18 | 10 | 7 | 12 | 10 | 7 | 12 | 9 | 13 | 2 | 2 | ...... |

## SIXTY-EIGHTH STREET PUMPING STATION—EVAPORATION TEST REPORT, 1909.

| Screenings Contract.<br>Month | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam pressure | 78.1 | 78.3 | 77.3 | 76.4 | 78.8 | 75.4 | 75.6 | 76.8 | 78.6 | 77.6 | 76.5 | 74.9 | 77.0 |
| Feed water temperature | 89.4 | 92.6 | 92.0 | 83.5 | 89.9 | 92.4 | 107.0 | 101.1 | 100.9 | 85.6 | 87.6 | 80.9 | 91.9 |
| Total coal | 11400 | 11400 | 12300 | 11800 | 9600 | 12600 | 11100 | 10950 | 11400 | 13000 | 11400 | 11100 | ....... |
| Total ash | 2180 | 1740 | 2000 | 2050 | 1700 | 2280 | 2100 | 2300 | 2200 | 2100 | 2550 | 1750 | ....... |
| % ash—boiler room | 19.12 | 15.26 | 16.26 | 17.37 | 17.71 | 18.10 | 18.92 | 21.00 | 19.30 | 16.15 | 22.37 | 15.77 | 18.11 |
| % ash—laboratory | 20.28 | 16.12 | 16.30 | 16.18 | 14.80 | 18.88 | 19.94 | 17.61 | 15.60 | 15.42 | 17.09 | 13.22 | 16.79 |
| % moisture | 10.08 | 12.81 | 10.75 | 13.95 | 11.57 | 12.48 | 9.81 | 10.01 | 10.47 | 10.92 | 9.82 | 12.51 | 11.27 |
| Dry coal | 10251 | 9940 | 10978 | 10154 | 8489 | 11028 | 10011 | 9854 | 10206 | 11580 | 10281 | 9711 | ....... |
| Combustible coal | 8071 | 8200 | 8978 | 8104 | 6789 | 8748 | 7911 | 7554 | 8006 | 9480 | 7731 | 7961 | ....... |
| Factor of evaporation | 1.1627 | 1.1594 | 1.1598 | 1.1684 | 1.1623 | 1.1589 | 1.1438 | 1.1503 | 1.1509 | 1.1665 | 1.1642 | 1.1707 | 1.1598 |
| Total water evaporated | 70000 | 70700 | 78200 | 72800 | 65100 | 72800 | 63700 | 69300 | 70700 | 86800 | 74200 | 67900 | ....... |
| Total equivalent evaporation | 81389 | 81970 | 90696 | 85060 | 75666 | 84368 | 72860 | 79716 | 81369 | 101252 | 86384 | 79491 | ....... |
| Equivalent evaporation per hour | 13565 | 13662 | 15116 | 14177 | 12611 | 14061 | 12143 | 13286 | 13562 | 16875 | 14397 | 13249 | ....... |
| Evaporation per lb. coal | 6.140 | 6.202 | 6.358 | 6.169 | 6.781 | 5.778 | 5.739 | 6.329 | 6.202 | 6.677 | 6.509 | 6.117 | 6.250 |
| Evaporation per lb. dry coal | 6.829 | 7.113 | 7.123 | 7.170 | 7.669 | 6.601 | 6.363 | 7.033 | 6.927 | 7.496 | 7.717 | 6.992 | 7.086 |
| Evaporation per lb. combustible coal | 8.673 | 8.622 | 8.710 | 8.983 | 9.589 | 8.322 | 8.052 | 9.174 | 8.833 | 9.156 | 9.598 | 8.529 | 8.853 |
| Equivalent evaporation per lb. coal | 7.139 | 7.190 | 7.374 | 7.208 | 7.882 | 6.696 | 6.564 | 7.280 | 7.138 | 7.789 | 7.578 | 7.161 | 7.250 |
| Equivalent evaporation per lb. dry coal | 7.940 | 8.246 | 8.262 | 8.377 | 8.913 | 7.650 | 7.278 | 8.090 | 7.973 | 8.744 | 8.402 | 8.186 | 8.172 |
| Equival't evaporat'n per lb. comb. coal | 10.208 | 9.996 | 10.102 | 10.496 | 11.145 | 9.664 | 9.210 | 10.553 | 10.163 | 10.681 | 11.174 | 9.985 | 10.281 |
| Cost of coal per ton | 1.87 | 1.87 | 1.87 | 1.69 | 1.69 | 1.69 | 1.69 | 1.69 | 1.69 | 1.69 | 1.69 | 1.69 | ....... |
| Cost of evaporat'g 1000 lbs. water—act. | 15.23 | 15.08 | 14.71 | 13.70 | 12.46 | 14.62 | 14.72 | 13.35 | 13.62 | 16.40 | 12.98 | 13.81 | 14.22 |
| Cost of evaporat'g 1000 lbs.—equivalent. | 13.10 | 13.00 | 12.68 | 11.72 | 10.72 | 12.62 | 12.87 | 11.61 | 11.84 | 14.06 | 11.15 | 11.80 | 12.26 |
| Cost of evaporat'g 1000 lbs.—equiv. dry. | 11.78 | 11.34 | 11.32 | 10.09 | 9.48 | 11.05 | 11.61 | 10.45 | 10.60 | 12.52 | 10.06 | 10.32 | 10.88 |
| B. T. U. per lb. coal—commercial | 10291 | 10541 | 11123 | 10042 | 10467 | 10189 | 10236 | 10603 | 10662 | 10930 | 10895 | 10622 | 10650 |
| B. T. U. per lb. coal—absorbed | 6894 | 6943 | 7121 | 6961 | 7612 | 6466 | 6339 | 7030 | 6893 | 7522 | 7318 | 6915 | 7001 |
| % efficiency of boilers | 66.99 | 65.87 | 64.02 | 69.32 | 72.72 | 63.46 | 61.93 | 66.30 | 64.65 | 68.82 | 67.17 | 65.10 | 66.36 |
| Heating surface—sq. ft. | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | ....... |
| Equiv. evap. per sq. ft. H. S. per hour. | 3.990 | 4.018 | 4.446 | 4.170 | 3.709 | 4.136 | 3.571 | 3.908 | 3.989 | 4.963 | 4.234 | 3.897 | 4.086 |
| Grate surface—sq. ft. | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | ....... |
| Dry coal per sq. ft. G. S. per hour | 23.7 | 23.0 | 25.4 | 23.5 | 19.7 | 25.5 | 23.2 | 22.8 | 23.6 | 26.8 | 23.8 | 22.5 | 23.6 |
| Horse power—rating | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | ....... |
| Horse power—developed | 393.2 | 396.0 | 438.1 | 410.9 | 365.5 | 407.6 | 352.0 | 385.1 | 393.1 | 489.1 | 417.3 | 380.0 | ....... |
| Lbs. coal per H. P. per hour | 4.8 | 4.8 | 4.7 | 4.8 | 4.4 | 5.2 | 5.3 | 4.7 | 4.8 | 4.4 | 4.6 | 4.8 | 4.8 |
| Temperature of superheated steam | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Factor including superheat | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Equiv. evap. dry using S. H. factor | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| Kind of coal | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | Sc'gs | ....... |
| Kind of furnaces | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | Chain Gear | .......<br>....... |
| Kind of boilers | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | 1Wat. Tube | .......<br>....... |
| Boilers in service—days | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 2 | ....... |
| Date of test | 14 | 9 | 11 | 13 | 6 | 11 | 9 | 10 | 14 | 19 | 16 | 3 | ....... |

## COAL ANALYSES, 1909.

| STATION. | DATE. | Average B. T. U. | | Average % Ash. | | Aver. % Moist. | |
|---|---|---|---|---|---|---|---|
| | | Found. | Guaran. | Found. | Guaran. | Found. | Guaran. |
| Chicago Avenue | Jan. 1, to March 31 | 13,006 | 12,600 | 10.51 | 14.40 | 10.72 | 12.80 |
| | April 1, to Dec. 31 | 12,701 | 12,000 | 11.56 | .......... | 10.25 | 12.80 |
| Fourteenth Street | Jan. 1, to March 31 | 12,958 | 12,600 | 10.56 | 14.40 | 8.21 | 12.80 |
| | April 1, to Dec. 31 | 12,885 | 12,000 | 9.94 | .......... | 9.67 | 12.80 |
| Twenty-second Street | Jan. 1, to March 31 | 12,444 | 12,600 | 13.24 | 14.40 | 12.35 | 12.80 |
| | April 1, to Dec. 31 | 12,494 | 12,000 | 12.13 | .......... | 11.57 | 12.80 |
| Central Park Avenue | Jan. 1, to March 31 | 12,073 | 12,600 | 15.65 | 14.40 | 11.57 | 12.80 |
| | April 1, to Dec. 31 | 12,413 | 12,000 | 12.88 | .......... | 12.26 | 12.80 |
| Springfield Avenue | Jan. 1, to March 31 | 11,814 | 12,600 | 18.79 | 14.40 | 12.29 | 12.80 |
| | April 1, to Dec. 31 | 12,377 | 12,000 | 13.41 | .......... | 12.50 | 12.80 |
| Harrison Street | Jan. 1, to March 31 | 11,514 | 11,600 | 19.92 | 16.80 | 13.92 | 12.80 |
| | April 1, to Dec. 31 | 11,669 | 11,000 | 16.56 | .......... | 13.66 | 12.80 |
| Lake View | Jan. 1, to March 31 | 12,209 | 12,600 | 15.35 | 15.00 | 12.31 | 12.80 |
| | April 1, to Dec. 31 | 12,546 | 11,900 | 12.60 | .......... | 12.52 | 12.60 |
| Sixty-eighth Street (Lump) | Jan. 1, to March 31 | 12,037 | 12,400 | 15.51 | 14.16 | 10.71 | 10.15 |
| | April 1, to Dec. 31 | 12,176 | 12,000 | 14.25 | .......... | 10.72 | 5.51 |
| Sixty-eighth Street (Screenings) | Jan. 1, to March 31 | 11,934 | 11,000 | 16.44 | 18.16 | 11.66 | 10.15 |
| | April 1, to Dec. 31 | 11,586 | 11,800 | 17.81 | .......... | 12.21 | 5.51 |
| Rogers Park | Jan. 1, to March 31 | 13,887 | 13,100 | 11.81 | 12.00 | 3.85 | 5.00 |
| | April 1, to Dec. 31 | 13,610 | 13,000 | 10.01 | .......... | 3.92 | 5.00 |
| Washington Heights | Jan. 1, to March 31 | no sampl's | 12,600 | .......... | 14.40 | .......... | 12.80 |
| | April 1, to Dec. 31 | 12,194 | 11,900 | 14.84 | ......... | 10.74 | 12.60 |
| Norwood Park | Jan. 1, to March 31 | 13,873 | 12,600 | 3.13 | 14.40 | 10.98 | 12.80 |
| | April 1, to Dec. 31 | 12,582 | 11,900 | 11.29 | .......... | 10.19 | 12.60 |
| Fullerton Avenue | Jan. 1, to March 31 | 12,414 | 12,600 | 13.80 | 14.40 | 12.01 | 12.80 |
| | April 1, to Dec. 31 | 12,007 | 12,000 | 15.51 | .......... | 14.09 | 12.80 |

## DIVISION OF BRIDGES AND HARBOR.

THOMAS G. PIHLFELDT, ENGINEER IN CHARGE.

The bascule bridge over the North Branch of the Chicago River at Kinzie street was completed and opened to traffic, and new bridges were built over the Illinois and Michigan Canal at Ashland avenue and at Kedzie avenue. New bascule bridges are in course of construction over the North Branch of the Chicago River at Erie street and over the South Branch at Polk street, both of which will be ready for traffic in the early part of 1910.

The repair work was carried on in such a manner that all the bridges and viaducts, with a few exceptions for short periods, were available for public travel during the year. Several of the old swing bridges are in such a state of dilapidation that any money expended for their repair is wasted, and the construction of modern bridges to replace them is an absolute necessity. This is notably the case with the 92nd street, the 35th street and the Indiana street bridges, all important river crossings. Nearly all the viaducts within the City Limits were inspected and examined thoroughly, and the various railroad companies owning tracks underneath them were notified to reconstruct or reinforce the structures in accordance with the ordinance passed by the City Council on July 6, 1909.

The Fuller street bridge was removed by order of the United States Government as being an obstruction to navigation, and the Blackhawk and Weed street bridges were also ordered removed by the Federal authorities for the same reasons, but owing to lack of necessary appropriations these bridges still remain in service.

The swing bridge over the River at Lake street has also been ordered removed by the United States Government, the removal to be completed by December 31, 1910. In order not to further increase the congestion on adjoining streets, which are overcrowded now, I urge that the Secretary of War be prevailed upon to extend the time for the removal of this bridge until the new traction tunnel under the River at Washington street and a bridge at Washington street are completed and opened to traffic. When the Madison street bridge was put out of service last November, the inconvenience to the public caused by the abolishing of a river crossing in the down-town district even for a comparatively short time was clearly demonstrated, and with no bridge either at Lake street or Washington street the business interests in the immediate vicinity would undoubtedly suffer heavily.

## BRIDGE DESIGNING.

ALEXANDER VON BABO, STRUCTURAL DESIGNER.

During the year 1909 plans for a trunnion bascule bridge over the Calumet River at 92nd street (Ewing avenue) were prepared. Plans for this bridge were started in 1908 and almost finished for a clear opening of 172 feet between river piers, but these had to be discarded and new plans were made to conform with the recommendations of the Harbor

Commission for a clear opening of 200 feet between river piers. The proposed new bridge calls for two leaves with two main trusses each. Its length between abutments is designed to be 337 feet, the distance from the centers of trunnions 228 feet and from the centers of river piers 208 feet. Two substantial filled approaches will lead to the bridge proper, the northwest approach is designed to be 287.50 feet and the southeast approach 291.67 feet long, making the total length of the improvement 916.17 feet from foot to foot of the approaches.

The useful width of the bridge proper is to be 52 feet, consisting of one roadway 36 feet wide between the wheel guards and two sidewalks each 8 feet wide in the clear.

The two movable leaves of the bridge are to be balanced by counter weights consisting almost entirely of concrete instead of cast and pig iron as in former designs, whereby the initial cost of the structure will be materially reduced. The operating machinery will show new features, as the operating struts are to be dispensed with and the movable parts of the bridge are arranged as compactly as possible. These advantages, the one referring to the counterweight and the other to the machinery, were made possible by a peculiar shape of the tail ends of the main trusses and by a new arrangement of the girders supporting the movable leaves.

Plans for a similar bridge but of a shorter span over the North Branch of the Chicago River at Indiana street were started and well advanced. This bridge is designed to have a clear opening of 160 feet between the river piers, a total useful width of 52 feet and is of the same general construction as the proposed 92nd street bridge.

The plans for the 35th street bridge, which had been nearly finished in the year 1908, were revised and modified, particularly in reference to masonry and to the automatic gates, the changes being based on experience with similar gates at the Kinzie street bridge.

Preliminary plans for a proposed two-story vertical lift bridge to be built over the South Branch of the Chicago River at Lake street and to replace the present drawbridge were prepared. The proposed bridge is designed for a clear span of 209.25 feet between the faces of the river piers and to have a roadway floor for the ordinary street traffic at the street level and a second floor for the Lake Street Elevated Road at the elevated railway level.

Considerable time was spent in investigating and preparing plans for repair work for the following structures: State street bridge, Ashland avenue bridge over the West Fork of the South Branch, North Halsted street bridge over the North Branch of Chicago River, Madison street bridge, Loomis street and other bridges.

For Madison street bridge, which on November 25th was greatly damaged by a large passing vessel, an entirely new drum, loading beams, etc., were designed, and specifications were prepared, so that the contract for the repair and reconstruction work could be awarded on December 22nd.

Some time was also spent in checking working drawings and in field inspection of structural iron and machinery parts for the Polk street and the Erie street bridges, which were both in course of erection.

Specifications for the following work were prepared:

New timber approaches and reconstruction of Lawrence avenue bridge over the North Branch of Chicago River.

Repairing and reconstructing South Kedzie avenue bridge over the West Fork of South Branch of Chicago River.

Cleaning and painting the superstructure of steel bridges and viaducts.

Street viaducts over railway tracks in the City of Chicago.

The examinations and investigations of existing viaducts and bridges in reference to the increased requirements of the street car traffic, started in the preceding year, were continued this year and carefully prepared reports of the conditions of the following structures were made:

Sangamon street viaduct between Carroll avenue and Kinzie street.

Milwaukee avenue and Desplaines street viaduct between Kinzie and Wayman streets.

Adams street viaduct between Canal street and the drawbridge.

Madison street viaduct between Canal and Market streets.

West Twelfth street viaduct over the P. Ft. W. & C. and C. B. & Q. R. R. tracks.

East Polk street viaduct between Fifth avenue and the new bascule bridge.

West Polk street viaduct east of Canal street.

Van Buren street viaduct over the P. Ft. W. & C. and C. B. & Q. R. R. tracks.

Fifth avenue approach to Twelfth street viaduct.

East Twelfth street viaduct over the C. R. I & P. Ry. tracks.

West Taylor street viaduct between Canal street and the Chicago River for heavy cars.

Fifth avenue approach to the East Polk street viaduct.

West Taylor street viaduct between Canal street and the Chicago River for light cars.

Good use of these reports has already been made by several railway companies in repairing and redesigning some of above structures.

A set of maps showing the location of the numerous street viaducts over railroad right of ways and of the important approaches to bridges was started and well advanced.

## BRIDGES AND VIADUCTS—REPAIRS AND MAINTENANCE.

JOHN A. LENNARTSON, ASSISTANT ENGINEER.

During the year of 1909 the City of Chicago maintained sixty-seven bridges over the Chicago River and its branches and the Calumet River, and twenty-eight viaduct systems were available for public travel. Of the bridges forty-eight are movable and nineteen are fixed spans. Twelve of the movable bridges are rolling lift bascule bridges, nine are trunnion bascule bridges (City's design), one is a Page bascule bridge, one is a vertical lift bridge and twenty-five are swing bridges. Thirty-two of the movable bridges are operated with electricity, one with steam and thirty-four with hand power.

The following is a brief synopsis of the repairs made during the year.

### BRIDGES.

ADAMS STREET BRIDGE.—A new center pier protection, consisting of one hundred and ninety-one piles and substantial timber construction was built. The old operating house was removed in order to give sufficient room for the operation over the bridge of the large improved street cars and a new elevated operating house was built over the sidewalk. New brakes and end locks were installed.

ARCHER AVENUE BRIDGE.—The trunnion bearings were overhauled, a new pit pump gear was put in and the brakes were adjusted.

ASHLAND AVENUE (WEST FORK) BRIDGE.—A new armature was installed in one of the operating motors, all the bearings were overhauled and all the iron work was painted. The electric feeders on the north side of the river were moved and placed in conduits in connection with the construction of new cement sidewalks on the approaches, and the center locks were put in working order.

ASHLAND AVENUE (SOUTH FORK) BRIDGE.—A platform was built around the center pier for the purpose of facilitating the lubrication of the machinery, and the bridge house which encroached to some extent on private property was moved.

BELMONT AVENUE BRIDGE.—Nearly all the top and bottom laterals were renewed as were also some of the main braces and counters. The chords were reinforced and the west approach was partly reconstructed in order to secure alignment of the car tracks on the bridge with the tracks on the approach.

BLACKHAWK STREET BRIDGE.—About one-half of the floorbeams were renewed, the old street car rails were removed and the entire roadway was replanked. Several new web members were placed and the chord cover was renewed throughout.

CANAL STREET BRIDGE.—The fixed portions of the bridge were paved with A. F. Shuman's wood and asphalt pavement and the machinery received a general overhauling.

CHICAGO AVENUE BRIDGE.—The pile bents carrying the approaches were reinforced in a substantial manner, the end rollers and locks were adjusted repeatedly, and the roadway planking on the trestle approach west of the bridge for a distance of about 200 feet was renewed.

CLARK STREET BRIDGE.—One hundred and eighty-seven piles were driven in place for the west end of the center pier protection and the piles were lined up and partly sawed off preparatory to capping. The parapet wall on the south abutment was rebuilt and the turn table and machinery were overhauled.

CLYBOURN PLACE BRIDGE.—The roadway on the entire bridge between the outer street car rail and the wheel guard was paved with A. F. Shuman's wood and asphalt pavement, lockers were built under the bridge houses, the upper buffers were adjusted, and the worm brakes were repaired.

DEARBORN STREET BRIDGE.—The pit pump motors were equipped with new armatures and field coils, the position of the gate pumps in the operating houses was changed, and the key seats in the brake pulleys were recut.

DIVERSEY STREET BRIDGE.—The bridge house was moved from the northeast corner to southwest corner of the bridge and the International Harvester Company rebuilt the south half of the east approach to the bridge.

EAST DIVISION STREET BRIDGE.—The tailpits were provided with iron ladders, the oil grooves in the trunnions were recut, a new center lock device was installed and the roadway of the bridge between the outer street car rail and the wheel guard was paved with A. F. Shuman's wood and asphalt pavement.

WEST DIVISION STREET BRIDGE.—The pavement on the east approach which had settled to a considerable extent on account of a break in a water main was raised and repaired, the center locks and bearings were overhauled and the chord cover was patched.

EIGHTEENTH STREET BRIDGE.—The lateral approach leading up to the west side of the bridge was partly reconstructed and a syphon system for the cleaning of the tailpits was installed.

FULLERTON AVENUE BRIDGE.—The frame bents supporting the west approach were almost entirely renewed and some of the bents underneath the east approach were reinforced. The west approach was repaved and the sidewalks and roadway planking were patched.

NORTH HALSTED STREET (RIVER) BRIDGE.—A new steel tank was erected in place in the northeast tail pit, timber bents were put in to carry the operating houses, a one inch extra heavy lead pipe, 175 feet in length, for the air compressors operating the center locks was laid in the river, and new center lock connections were placed. The cantilevering roadway stringers on the south approach were reinforced with heavy steel plates and angle irons, and new wearing plates were placed at the break in the floor.

SOUTH HALSTED STREET BRIDGE.—All the subplanking was renewed and the roadway between the outer street car rail and the wheel guard was paved with A. F. Shuman's wood and asphalt pavement. Additional brakes were placed, the idlers were equipped with new springs, the carriage column at the northeast corner of the bridge was reinforced. the tower angles were straightened, and the operating cables were fitted with new turn buckles.

HARRISON STREET BRIDGE.—A large number of the sole plate rivets which had sheared off were replaced with countersunk bolts, the main bearings were secured in place by means of steel plates and wedges and the pavement on the roadway was patched.

INDIANA STREET BRIDGE.—A new center step and screw were placed, the stone work on the east abutment which had been pushed riverward by the driving of foundation piles for an adjacent building was trimmed off to give sufficient clearance for the swinging of the bridge, the circle rails and locks were repaired and the end rollers were adjusted.

KINZIE STREET TEMPORARY BRIDGE.—On January 30th the west end of the pontoon span sank to the bottom of the river while a swing was being made and completely blocked navigation at this point. After the span was raised the entire electrical equipment which had been damaged by water was removed and new motors, controller, etc., were substituted, and the bridge was reopened to traffic on February 4th. Upon the completion of the Kinzie street bascule bridge the pontoon span was moved to the North Turning Basin to be stored for future use, and the approaches and pile clumps were removed from the channel.

KINZIE STREET BASCULE BRIDGE.—Permanent electric feeders were installed, the automatic gate on the west side of the river was adjusted and put in working order and the pavement on the approaches, which had gone down considerably on account of the settlement of the underlying filling, was raised and relaid.

LAKE STREET BRIDGE.—Two G. E. 58 motors and two brake solenoids of improved design were installed, two new steel rack sections were placed, the end adjustment device was overhauled and two pile clumps were driven to protect the north end of the west abutment.

LAUREL STREET BRIDGE.—The roadway was paved with A. F. Shuman's wood and asphalt pavement and the locks were repaired.

LOOMIS STREET BRIDGE.—A large number of the sole plate rivets which had sheared off were replaced with countersunk bolts, new improved heel lock solenoids were installed and all of the iron work was painted one coat of paint. On December 3rd the south leaf of the bridge slid forward while it was in motion and it rode up on the teeth of the track girders in such a manner that large pieces of metal were torn out of the sole plates, and the bridge was thrown out of service. The repairs of the damage, which was very extensive, are still in progress.

MADISON STREET BRIDGE.—The west abutment which had gradually moved toward the river after the channel was dredged was anchored back to arrest further movement and the sewer outlet of the west side was rebuilt. On November 25th the steamer "Bethlehem" collided with the bridge and pushed the superstructure in a southerly direction for a distance of about four feet. The end floorbeam was badly bent by the force of the impact, the turntable was completely wrecked and the northeast corner of the protection was demolished. The City bridge repair force jacked up the span and moved it back to a central position and also repaired the damage done to the protection, which, aside from the timber work, required the driving of fifty-six piles. The reconstruction of the turntable is being done by contract, and is reported under construction.

MAIN STREET BRIDGE.—Owing to alterations in the shafts of the water pipe tunnel at this bridge the anchorages for the river cables were changed, the armature in one of the operating motors and one controller, which had been damaged by lightning, were replaced with new ones, and all of the iron work was painted.

NINETY-SECOND STREET BRIDGE.—This bridge is in a very dilapidated condition and a force of workmen has been employed almost constantly throughout the year, in order to keep the bridge in service.

NINETY-FIFTH STREET BRIDGE.—The oil grooves in the trunnions were recut, the liners in the bearings were reduced and a danger signal system consisting of vibrating electric gongs and electric signs about four feet high with the word "STOP" were installed on the approaches.

NORTH AVENUE BRIDGE.—New brackets for the idlers were placed, the leaks in the tailpits were stopped, the center locks and brakes were repaired and the roadway planking was patched.

ONE HUNDRED AND SIXTH STREET BRIDGE.—The center step was equipped with a new set of rollers and new grease cups, and the crown gear shaft bearings were overhauled. The west approach was struck repeatedly by passing vessels and the damage done was in most cases of considerable proportions. Repairs were made as expeditiously as conditions would permit, but in order to effect permanent relief the bridge should be lengthened ten or fifteen feet and increase the width of the draw correspondingly.

RANDOLPH STREET BRIDGE.—A new pit pump and pit pump motor was installed in the east machinery room, the beams at the break in the floor were reinforced and anchored, and a number of sheared-off sole plate rivets were replaced with countersunk bolts. Some of the counterweights which had become loose and fallen down in the tailpits were put back into place and the machinery was overhauled.

RIVERDALE BRIDGE.—The south approach was rebuilt and the roadway of the entire bridge and part of the approaches was replanked. The end rollers were repaired and adjusted and new circle beams and sole plates were put in.

RUSH STREET BRIDGE.—The parapet wall on the south abutment was trimmed off, and locks and rollers were repaired and adjusted and the chord cover and sidewalks were patched.

STATE STREET BRIDGE.—Additional stringers were put in on the north approach to carry the street-car tracks from the new viaduct to the bridge, the heel locks and pit pumps were repaired repeatedly and new bumping blocks were installed. On July 19th the east bottom chord of the north leaf was broken in a collision with a large dump scow in tow of the tug "Keystone," which necessitated the renewal of this panel of the chord, during which time the bridge was out of service. While this work was being done a new main shaft for the north leaf was erected in place, all the bearings were rebabbitted, the counterweights were adjusted and fastened and countersunk bolts were substituted for the sheared-off rivets in the sole plates. A clump of nineteen piles was driven to protect the east end of the north river pier.

TAYLOR STREET BRIDGE.—A new device for the operation of the brakes and heel locks was installed, additional rods were placed to hold the sole plates to the segmental girders, a syphon system for cleaning the tailpits was placed in operation and new channel irons were erected in place at the break in the floor.

TWELFTH STREET BRIDGE.—A new floor was laid in the operating house, a new crown gear shaft was installed, the turntable rack was adjusted and the engine was repaired. The bridge was struck repeatedly by vessels which damaged the sidewalks more or less. The cost of the repairs was billed against the owners of the vessels.

TWENTY-SECOND STREET BRIDGE.—A portion of the west approach was paved with A. F. Shuman's wood and asphalt pavement and the operating machinery was overhauled and adjusted.

THIRTY-FIFTH STREET BRIDGE.—The east bridge seat was rebuilt and the stringers and joists on the east end of the bridge were renewed. This bridge is in an extremely bad condition and it will be impossible to keep it in service much longer.

VAN BUREN STREET BRIDGE.—New floors were laid in the bridge houses, new pipe lines were put in for the air compressors and a new valve was installed for the locks and brakes. The brasses in the bearings were refitted, the oil grooves were recut, the boxes for the strut idlers were rebored and all of the pins in the operating struts were renewed. New main pillow blocks for the east leaf were erected in place, the pump motors were equipped with new armatures and fields and all of the iron work was painted. Other repairs were made by contract, to which attention is called under the heading of Bridge Construction.

WEBSTER AVENUE BRIDGE.—Two pile clumps were driven to protect the north side of the west approach, the roadways and sidewalks on the approaches were patched and the bridge house was repaired.

WELLS STREET BRIDGE.—New end lock castings were put in on both abutments, the east half of the north approach was paved with A. F. Shuman's wood and asphalt pavement and a clump of piles was driven at the southeast corner of the protection. The pavement on the bridge was patched, and the end screws and end rollers were adjusted.

NORTH WESTERN AVENUE BRIDGE.—A system of sidewalk lights were installed, the pavement on the bridge and approaches was patched, the center locks and bearings were overhauled, and the pit pumps were repaired and lined up.

SOUTH WESTERN AVENUE BRIDGE.—The roadway planking was partly renewed and the locks were repaired.

The planking on the roadways of nearly all the fixed bridges over the North Branch of the river was patched and all of the bridge houses were painted inside and outside.

On account of the dredging operations carried on by the United States Government the submarine cables for all the electrically operated bridges on the Main River, the North Branch and part of the South

Branch had to be removed. This involved an expense to the City of over $3,000.00, as many of the cables were so badly damaged in pulling them out that they could not be relaid.

On January 21st the Lake Street Shop was destroyed by fire, presumably caused by a crossed electric wire. Following the fire the shop was rebuilt and the material and supplies were replaced.

Two new derrick scows 44x18 feet were built and placed in service.

A large number of accidents happened during the year, resulting in the bridges being damaged more or less seriously by vessels, street cars, automobiles and other vehicles. When repairs to damages were completed, the cost was billed against the parties responsible.

The Fuller Street Bridge was removed by order of the Secretary of War on account of it being an obstruction to navigation.

## VIADUCTS.

Chicago Avenue and Halsted Street Viaduct.—Four hundred lineal feet of sidewalk was built on the north side of the east approach. The cost of this work was billed to the Chicago & North Western Railway Company.

Dearborn Avenue Viaduct.—The driveways leading into Steele-Wedeles Warehouse were reconstructed so as to conform to the sidewalk grades as nearly as possible.

Wells Street Viaduct.—The roadway between the outer street-car rail and the wheel guard was paved with A. F. Shuman's wood and asphalt pavement. The cost of this work was billed to the Chicago & North Western Railway Company.

Repairs were made to a number of other viaducts by the various railroad companies owning tracks underneath the respective structures.

During the year the Ogden avenue viaduct was removed on account of track elevation and a new viaduct was built over the tracks of the Chicago and North Western Railway Company at North State street.

The following statement shows in detail the expenditures on the various bridges and viaducts, exclusive of bridge-tenders' salaries, during the year of 1909:

## NEW BRIDGE CONSTRUCTION.

Clarence S. Rowe, Assistant Engineer.

Kinzie Street Trunnion Bascule Bridge.—The erection of the superstructure was commenced October 15, 1908. The superstructure was completed and the bridge was opened to street traffic May 10, 1909. This is a trunnion bascule bridge of one leaf, with a distance of 136 feet from center of trunnion to center of abutment. The entire width is 60 feet. There are two roadways, each 18 feet in width, and two sidewalks each 9 feet in width. Three trusses are provided at a distance of 21 feet center to center. There is a clear channel 100 feet in width for the passage of vessels. The leaf is operated by two 75 horsepower motors.

| | |
|---|---|
| Contract cost of substructure | $ 99,058.57 |
| Contract cost of superstructure | 100,691.73 |
| Miscellaneous | 18,957.56 |
| Cost complete | $218,707.86 |

Contractor for the substructure, Great Lakes Dredge and Dock Company; contractor for the superstructure, John J. Gallery. Mr. Wm. A. Mulcahy, Assistant Engineer, was in local charge of the work.

ERIE STREET TRUNNION BASCULE BRIDGE.—The placing of the concrete in the foundations was commenced November 24, 1908. The work on the substructure was entirely completed April 23, 1909. The foundations are of Portland cement concrete, reinforced with twisted steel bars and rests on foundation piles driven to a depth of about —57.0 feet C. D.

The erection of the superstructure was commenced June 17, 1909. By December 31, 1909, the steel work erection was practically completed, and the machinery was installed. The east leaf was operated for the first time December 7th and the west leaf was lowered December 8, 1909.

During the month of December the placing of the subplanking, wheel guard, chord cover, sidewalks and Shuman pavement on the movable portions of the bridge was practically completed. About 20 per cent of the painting of the structure remained to be done. The cement sidewalks and the concrete foundation for the pavement on the roadway of the fixed portions are in place, but Shuman pavement had not been laid on the same. The completion of the above work was seriously interfered with by cold and stormy weather.

The raising of the grade of the roadway at the east abutment necessitates the removal of the existing granite block pavement on the east approach for a distance of about 145 feet, and the construction of a new concrete foundation and the replacing of the granite block pavement to conform to the new grade. The pavement of the street at this point is under reserve to the Citizens Construction Company, and the work of reconstructing the pavement will be done under their contract with the Board of Local Improvements.

The bridge is a trunnion bascule type, consisting of two leaves, with a distance of 191 feet 4 inches from center to center of the trunnions. The entire width is 60 feet. There are two roadways each 18 feet in width and two sidewalks with 8 feet of available width. The two trusses are placed at a distance of 41 feet 6 inches, center to center. There is a clear channel of 140 feet in width for the passage of vessels. Each arm or leaf is driven by two electric motors of 40 horsepower each.

The contract liability for construction of the substructure (exclusive of the pavement of the east approach) is $86,782.22. Contractor for the substructure, Fitz Simons & Connell Co.; contractor for the superstructure, King Bridge Co., Cleveland, O. Mr. John C. Penn, Assistant Engineer, was in local charge of the construction of the substructure. Mr. Wm. A. Mulcahy, Assistant Engineer, is in local charge of the construction of the superstructure.

**Polk Street Bascule Bridge.**—The placing of the concrete in the piers on the west side of the river was commenced January 14, 1909, and completed April 24, 1909. The placing of concrete in the east foundation was commenced April 6th and completed May 26, 1909. The channel was dredged to a depth of —28.0 feet C. D.

The substructure of this bridge, including pier protections, docks, sewers, etc., was completed October 14, 1909. The foundations are of Portland cement concrete, reinforced with twisted steel bars and rests on foundation piles which were driven to a depth of about —48.50 feet C. D. on the east side of the river and to a depth of about —44.0 feet C. D. on the west side.

The contract cost of the substructure (exclusive of pavement of west approach) was $71,378.01. Contractor for the substructure, Standard Construction Company.

The erection of the superstructure was commenced September 13, 1909. Contractor for the superstructure, John J. Gallery.

The main trusses, floor beams, stringers and sidewalk brackets of the west leaf are in place and partly riveted. The erection of the east side steel was commenced December 6th. The girders and "A" frames of the fixed portion were erected, the pivots were placed and aligned and were partly bolted.

Pedestrian travel at the site of the bridge is being taken care of by a City ferry boat which is propelled by a gasoline motor. Mr. Carl O. Johnson, Assistant Engineer, is in local charge of this work.

**South Ashland Avenue (I. and M. Canal) Bridge.**—The work of building the temporary supports for the old span, the necessary temporary approaches to the same, the moving and mounting of the old span on the temporary supports was completed and the street traffic was diverted to this temporary bridge, which was located just west of Ashland avenue, on January 15, 1909.

The partial removal of the old abutment and the rebuilding and reinforcing of the same to receive the new superstructure was completed during February, 1909. The framing of the false work for the erection of the new span was commenced March 1, 1909. The north-bound cars of the Chicago City Railway began using the new bridge April 14, 1909. The south-bound cars and teams began using the new bridge April 16th, and traffic over the temporary bridge was abandoned.

The superstructure was complete April 19, 1909.

| | |
|---|---|
| The contract cost of substructure, including temporary bridge | $ 5,144.03 |
| Contract cost of superstructure | 10,879.00 |
| The contract cost of constructing and reinforcing culvert (1908) | 5,292.77 |
| Miscellaneous | 3,043.88 |
| Cost complete | $24,359.68 |

Contractor for the substructure (including temporary bridge), John O'Brien; Contractor for the superstructure, Milwaukee Bridge Company.

The new bridge is a single span, with two Pratt trusses, with a distance of 127 feet $5^{15}/_{16}$ inches from center to center of the bearings. The distance from center to center of trusses is 27 feet. The total width of the bridge is 42 feet. One roadway 24 feet in width and two sidewalks with an available width of 6 feet 6 inches are provided. Mr. Albert Wain was in local charge of the work.

South Kedzie Avenue (I. and M. Canal) Reinforced Concrete Arch.—The construction of a temporary bridge about 70 feet west of Kedzie avenue was commenced July 19, 1909. Pile bents were constructed in the canal, leaving a clear channel of about 19 feet in width for the passage of boats. Timber bents formed the supports of the approaches. The floor system was completed and the temporary bridge was opened to traffic on August 4, 1909.

The old span was wrecked and removed and the excavation for the abutments of the new reinforced concrete arch was commenced on August 12th. The placing of concrete in the abutments was commenced September 13th, and the skew backs were completed on October 9th. In the arch proper, the center longitudinal section, being one-third of the width of the arch, was in place by October 18th. The concrete in the east section of the arch was placed on October 22nd and the arch was completed when concrete was placed in the third or west section on October 25, 1909. The placing of the concrete in each section was a continuous operation and required the service of about twenty-five men for one nine-hour day.

The abutment walls, parapet walls, spandrel walls, sidewalks, curbs, hand rails and pedestals were constructed, and the tracks of the Chicago City Railway were installed on the bridge, the pavement of the roadway was completed and the bridge was opened to traffic on December 18, 1909. The temporary bridge was removed before end of year. The new bridge is a concrete arch, reinforced with twisted steel bars and has a clear span of 75 feet between the skew backs measured on the center line of bridge. It makes an angle of 68° 30′ with the center line of the Illinois and Michigan Canal. The rise of the arch is 15 feet above the springing line. The curve of the arch ring has five centers, and at the crown the arch ring is 15 inches thick. The spandrel walls are of a closed construction. The width of the roadway is 24 feet. Two sidewalks, each of 7 feet in width, are provided. The total length of the bridge is 140 feet.

| | |
|---|---|
| Contract cost of bridge was | $20,945.05 |
| Miscellaneous | 4,326.71 |
| Total amount | $25,271.76 |

Contractor, Fitz Simons & Connell Co. Mr. John C. Penn, Assistant Engineer, was in local charge of this work.

Van Buren Street Bridge (Repairs and reinforcement).—The repairing and reinforcing of this bridge consisted of the following work: Renewing the structural steel supports for the counterweights at the rear end of the two movable parts of the bridge, placing an additional roadway stringer under each inner street-car rail on both of the movable parts and on the east and west approaches, placing the street-car rails, reinforcing the cantilevering parts of the stationary floors, renewing the roadway joint edge castings between the movable and the fixed portions and renewing the roadway pavement on the movable parts and on the approaches.

The above work was commenced April 29, 1909, and completed June 17, 1909. Regular traffic was resumed across the bridge about noon of June 17, 1909.

The contract cost of the repairs and reinforcements was $8,338.00. Contractor, G. W. Jackson, Inc. Mr. Frank A. Berry, Assistant Engineer, was in local charge of this work.

LAWRENCE AVENUE BRIDGE.—For the accommodation of pedestrians crossing the river at this point during the reconstruction of the old bridge, a temporary pontoon bridge was constructed at a point just north of Lawrence avenue. The pontoon consisted of a board walk 5 feet wide, which was supported by barrel floats being placed at intervals under the stringers.

The work of reconstructing the bridge and the construction of the new timber approaches to same was commenced July 19, 1909. The new pile bents for the support of the span were constructed and the span was shifted to its permanent position. The roadway stringers and the wearing surface on the old span were renewed and new sidewalks were constructed. The tracks of the Consolidated Traction Company were installed on the span and the approaches. The work, including the new timber approaches, was completed on October 16, 1909. The length of the bridge, including approaches, is 420 feet.

The contract cost of the reconstruction and the new approaches was $8,669.65. Contractor, Roemheld Construction Company. Mr. Frank A. Berry, Assistant Engineer, was in local charge of the work.

FULLER STREET BRIDGE.—This bridge was removed to comply with an order from the Secretary of War. The work of removing the old span, center pier and protection was commenced October 30, 1909, and the removal, including the dredging of the channel of the river at this point to a minimum depth of —23.0 C. D., was completed on November 13, 1909. The contract cost of the removal and dredging was $2,352.96. Contractor, Great Lakes Dredge and Dock Company. Mr. Frank A. Berry, Assistant Engineer, was in local charge of the work.

SOUTH KEDZIE AVENUE (WEST FORK) BRIDGE.—The main supports for the trusses on the north side of the river were in such condition as to necessitate the renewal of the foundation under the old timber bents. Sheet piling was driven and anchor rods were placed to secure the river bank. The above work was done by the day labor of the Bridge Division. The reinforcing and reconstruction of the bridge was commenced November 23, 1909. The bottom chords were reinforced by additional cover plates. The cover plates for the strengthening of the top chord remain to be placed. The end posts were reinforced by additional channel beams and the first and second diagonals by cover plates.

The floor beams, formerly of wood, were replaced by new steel beams, provided with one sidewalk bracket. In connection with the floorbeams there were also built new hangers, and the necessary hanger plates were placed on top of the old gusset plates, which were kept intact on the trusses.

Knee braces were added to reinforce the old top laterals and new end portal braces were provided. The new bottom laterals remain to be placed. The work will further consist of the removal of the timber construction of the floor of the span, the sidewalks, etc., and the remodeling and reconstruction of the approaches.

In order to leave one-half of the roadway available during the renewal of the other half, the contractor commenced the removal of the east half of the decking of the span on December 27th.

The remodeling and reconstruction of the timber approaches have not been commenced. Contractor, Geo. P. Cullen. Mr. Frank A. Berry, Assistant Engineer, was in local charge of this work.

MADISON STREET BRIDGE.—The Madison street bridge was struck by a vessel on November 25, 1909. The bridge was shifted for a distance of about four feet to the south, thereby crumpling and damaging the spider wheel, drum, loading beams, floorbeams, stringers, etc.

The bridge was moved back to its proper position over the center pier and was blocked up, with cribbing on the center pier protection, at an elevation about 8 inches higher than its final position. The old drum, spider wheel, etc., were removed and the center pier was almost cleared of obstructions by the end of the year. The above work was done by the Bridge Division repair force.

On December 21, 1909, the contract for the repair and reconstruction of the bridge was awarded to the Roemheld Construction Company. The shop work on the steel was started immediately and on December 28th the contractor began cutting out the floorbeam of the north end. The contract includes the manufacturing and the erection in place of a new spider wheel, new drum, new center casting, new loading beams, new stringers in center panel, one new end floorbeam, and the repairing or renewal of all damaged metal parts of the superstructure and machinery. Mr. John C. Penn, Assistant Engineer, in local charge of this work. On December 10th, a ferry boat with a capacity of 90 persons, was placed in service for the accommodation of pedestrians crossing the river at this point.

## BUREAU OF ENGINEERING. DIVISION OF BRIDGES AND VIADUCTS.

### STATEMENT OF EXPENDITURES OF REPAIRS, MAINTENANCE AND OPERATION, EXCLUSIVE OF BRIDGE TENDERS' SALARIES, FOR PERIOD ENDING DECEMBER 31st, 1909

| BRIDGE. | Labor. | Material. | Supplies. | Coal. | Piles. | Current. | Office Salaries. | Teams. | Total. |
|---|---|---|---|---|---|---|---|---|---|
| Adams Street | $5,105.01 | $2,344.34 | $ 63.50 | $ 58.00 | $ 4,051.87 | $ 600.00 | .......... | .......... | $ 12,222.72 |
| Archer Avenue | 1,017.40 | 171.23 | 34.09 | 36.25 | .......... | 600.00 | .......... | .......... | 1,858.77 |
| Ashland Ave. (S. Fork.) | 715.97 | 200.48 | 8.75 | 35.50 | .......... | .......... | .......... | .......... | 960.70 |
| Ashland Ave. (W. Fork) | 3.404.80 | 2,310.81 | 103.54 | 78.00 | .......... | 600.00 | .......... | .......... | 6,497.15 |
| Belmont Avenue | 1,656.50 | 374.89 | 8.28 | 35.50 | .......... | .......... | .......... | .......... | 2,075.17 |
| Blackhawk Street | 2,066.75 | 880.66 | 27.20 | 27.50 | .......... | .......... | .......... | .......... | 3,002.11 |
| Canal Street | 1,259.55 | 274.40 | 50.17 | 72.50 | 534.88 | 600.00 | .......... | .......... | 2,791.50 |
| Chicago Avenue | 1,380.95 | 431.71 | 30.45 | 43.50 | .......... | .......... | .......... | .......... | 1,886.61 |
| Clark Street | 3,557.17 | 1,804.66 | 80.13 | 65.25 | 5,243.70 | 600.00 | .......... | .......... | 11,350.91 |
| Clybourn Place | 1,970.00 | 420.49 | 38.52 | 29.00 | .......... | 600.00 | .......... | .......... | 3,058.01 |
| Dearborn Street | 1,979.26 | 267.59 | 53.00 | 72.50 | .......... | 600.00 | .......... | .......... | 2,972.35 |
| Diversey Street | 515.90 | 207.36 | 25.26 | 42.75 | .......... | .......... | .......... | .......... | 791.27 |
| E. Division Street | 2.251.50 | 1,893.85 | 42.69 | 72.50 | .......... | 600.00 | .......... | .......... | 4,860.54 |
| W. Division Street | 1,548.00 | 535.38 | 32.77 | 43.50 | .......... | 600.00 | .......... | .......... | 2,759.65 |
| 18th Street | 3,075.10 | 1,317.40 | 58.26 | 87.00 | .......... | 600.00 | .......... | .......... | 5,137.76 |
| Erie Street | .......... | .......... | .......... | .......... | .......... | .......... | .......... | .......... | .......... |
| Fuller Street | 273.25 | 92.88 | 23.54 | 34.75 | 50.94 | .......... | .......... | .......... | 475.36 |
| Fullerton Avenue | 3,376.84 | 1,606.37 | 19.06 | 36.22 | .......... | 600.00 | .......... | .......... | 5,638.49 |
| N. Halsted St. (Canal) | 1,866.60 | 1,042.60 | 94.74 | 29.00 | .......... | 695.00 | .......... | .......... | 3,727.94 |
| N. Halsted St. (River) | 3.310.81 | 1,848.36 | 63.23 | 65.25 | .......... | 600.00 | .......... | .......... | 5,887.65 |
| S. Halsted Street | 3,726.32 | 2,808.72 | 551.12 | 36.25 | .......... | 600.00 | .......... | .......... | 7,722.41 |
| Harrison Street | 2,146.55 | 403.18 | 72.73 | 87.00 | .......... | 600.00 | .......... | .......... | 3.309.46 |
| Indiana Street | 992.75 | 318.84 | 20.62 | 35.50 | .......... | .......... | .......... | .......... | 1.367.71 |
| Jackson Street | 1,520.05 | 296.02 | 58.12 | 58.00 | .......... | 600.00 | .......... | .......... | 2.532.19 |
| N. Kedzie Avenue | 447.65 | 846.55 | .......... | .......... | .......... | .......... | .......... | .......... | 1,294.20 |
| Kinzie Street | 1,770.97 | 1,043.27 | 55.77 | 30.00 | 55.00 | 350.00 | .......... | .......... | 3,305.01 |
| Lake Street | 1,769.18 | 508.64 | 38.56 | 38.67 | 208.33 | .......... | .......... | .......... | 2,563.38 |
| Laurel Street | 545.65 | 863.35 | 21.62 | 34.00 | .......... | .......... | .......... | .......... | 1,464.62 |
| Loomis Street | 2,752.85 | 1,606.21 | 43.05 | 79.75 | .......... | 600.00 | .......... | .......... | 5,081.86 |
| Madison Street | 6,666.80 | 3,401.32 | 95.47 | 58.00 | 17.50 | 600.00 | .......... | .......... | 10,839.09 |
| Main Street | 2,732.01 | 1,129.81 | 37.31 | 75.85 | .......... | 600.00 | .......... | .......... | 4.574.98 |
| 92nd Street | 2,680.25 | 754.52 | 20.00 | 30.50 | 446.75 | .......... | .......... | .......... | 3,932.02 |
| 95th Street | 2,180.35 | 713.84 | 82.19 | 83.35 | .......... | 600.00 | .......... | .......... | 3.659.73 |
| North Avenue | 2.530.45 | 584.84 | 60.87 | 58.00 | .......... | 600.00 | .......... | .......... | 3.834.16 |
| **106th Street** | 1,373.55 | 258.57 | 18.21 | 37.85 | 548.25 | .......... | .......... | .......... | 2,236.43 |
| **Polk Street** | .......... | .......... | .......... | .......... | .......... | .......... | .......... | .......... | .......... |
| **Randolph Street** | 3.837.79 | 1,854.47 | 106.50 | 79.75 | .......... | 600.00 | .......... | .......... | 6,478.51 |

| BRIDGE. | Labor. | Material. | Supplies. | Coal. | Piles. | Current. | Salaries. | Teams. | Total. |
|---|---|---|---|---|---|---|---|---|---|
| Riverdale | $ 897.70 | $ 210.58 | $ 16.35 | $ 17.00 | $ 243.00 | | | | $ 1,384.63 |
| Rush Street | 3,174.05 | 658.48 | 56.92 | 43.50 | 89.35 | 600.00 | | | 4.622.30 |
| State Street | 10,683.07 | 4,609.61 | 118.14 | 85.14 | 947.11 | 600.00 | | | 17,043.07 |
| Taylor Street | 3,541.42 | 1,019.40 | 59.70 | 79.75 | | 600.00 | | | 5,300.27 |
| Torrence Avenue | 699.30 | 16.85 | 16.25 | 34.00 | 1,194.88 | | | | 1,961.28 |
| 12th Street | 3,190.90 | 488.27 | 39.45 | 870.82 | 1,473.08 | | | | 6,062.54 |
| 22nd Street | 1.574.80 | 287.48 | 102.53 | 116.00 | | 600.00 | | | 2.680.81 |
| 35th Street | 861.80 | 120.75 | 26.99 | 27.50 | | | | | 1.037.04 |
| Van Buren Street | 4,648.64 | 1,777.89 | 89.79 | 58.00 | | 600.00 | | | 7,174.32 |
| Washington Street | | | | | | | | | |
| Webster Avenue | 1,695.80 | 370.02 | 29.13 | 36.50 | 264.19 | | | | 2,395.64 |
| Weed Street | 1.375.00 | 145.50 | 9.13 | 13.00 | | | | | 1,542.63 |
| Wells Street | 608.84 | 498.43 | 9.87 | | 362.57 | | | | 1,479.71 |
| N. Western Avenue | 2,210.26 | 443.98 | 61.72 | 72.50 | | 600.00 | | | 3,388.46 |
| S. Western Avenue | 391.10 | 240.25 | 13.73 | 27.50 | | | | | 672.58 |
| Polk Street Ferry | 1.415.80 | 144.14 | 14.08 | | | | | | 1.574.02 |
| Kinzie Street Pontoon | 2,197.68 | 739.88 | 30.38 | 27.50 | 3,793.95 | | | | 6,789.39 |
| Lake St. Shop | 1,885.00 | 2,055.42 | 38.47 | 58.00 | | | | | 4,036.89 |
| Milwaukee Ave. Via | 133.55 | 51.15 | | | | | | | 184.70 |
| Kinzie & Halsted St. Via | 136.05 | | | | | | | | 136.05 |
| Ashland Ave. Pontoon | 61.50 | 51.32 | | | 1,015.88 | | | | 1,128.70 |
| Sangamon St. Via | 204.90 | 15.84 | | | | | | | 220.74 |
| 18th Street Shop | | 3.36 | 17.38 | 14.50 | | | | | 35.24 |
| N. 48th Avenue | 391.80 | 247.09 | | | | | | | 638.89 |
| Inspecting Via | 980.40 | | | | | | | | 980.40 |
| Steamer Hopkins | 289.75 | 114.85 | 53.35 | 564.75 | | | | | 1,022.70 |
| Wells Street Via | 30.00 | | | | | | | | 30.00 |
| Harbor Master—Vessel Desp. | 402.75 | 49.27 | 6.85 | 21.75 | | | | | 480.62 |
| N. 40th Avenue | 344.50 | 6.05 | | | | | | | 350.55 |
| Clark Street Stairway | 183.25 | 268.85 | | | | | | | 452.10 |
| State Street Via | 51.00 | | | | | | | | 51.00 |
| 18th Street Scow | 620.42 | 371.84 | | | | | | | 992.26 |
| Clark Street Via | 107.80 | | | | | | | | 107.80 |
| Kedzie Ave. (W. Fork) | 1.104.80 | 309.21 | 1.25 | | | | | | 1,415.26 |
| W. Foster Ave. Br. | 121.20 | | | | | | | | 121.20 |
| N. 56th Avenue | 251.35 | 18.16 | | | | | | | 269.51 |
| Forrest Glen Bridge | 228.75 | 164.85 | | | | | | | 393.60 |
| Peterson Ave. Culvert | 65.10 | 40.00 | | | | | | | 105.10 |
| Lincoln Ave. Bridge | 25.35 | 54.00 | | | | | | | 79.35 |
| General Account | 22,571.08 | 5,954.27 | 181.93 | | 350.00 | | 13,537.07 | 3,333.75 | 45,928.10 |
| Totals | $147,360.99 | $56,964.67 | $3,132.71 | $3,954.65 | $20.891.23 | $17.245.00 | $ 13,537.07 | $ 3,333.75 | $266,420.07 |

## OPERATION OF BRIDGES, YEAR 1909.

### PATRICK WHITE, SUPERINTENDENT.

The following table gives a detailed account of the bridges of the City, showing the average time consumed per swing, also giving an average number of swings that each bridge makes, both monthly and annually, and also by what kind of power each bridge is operated.

| BRIDGE | | Average Time of each Swing in Minutes | Average Number of Swings each Month | Total Number of Swings Annually |
|---|---|---|---|---|
| Adams street | Electricity | 3.40 | 292 | 3504 |
| Archer avenue | " | 3.00 | 66 | 797 |
| Ashland avenue (South Fork) | Hand | 0.00 | 0 | 0 |
| Ashland avenue (West Fork) | Electricity | 5.06 | 240 | 2880 |
| Belmont avenue | " | 3.53 | 83 | 787 |
| Blackhawk street | Hand | 5.41 | 458 | 5494 |
| Canal street | Electricity | 4.20 | 299 | 3591 |
| Chicago avenue | Hand | 5.34 | 166 | 1995 |
| Clark street | Electricity | 2.61 | 527 | 6330 |
| Clybourn place | " | 3.92 | 48 | 577 |
| Dearborn street | " | 3.13 | 533 | 6401 |
| Diversey boulevard | Hand | 7.80 | 17 | 206 |
| East Division street (Canal) | Electricity | 3.17 | 35 | 422 |
| West Division street (River) | " | 4.19 | 91 | 1089 |
| Eighteenth street | " | 3.54 | 265 | 3180 |
| Erie street (now under construction) | | 0.00 | 0 | 0 |
| *Fuller street | Hand | 3.91 | 403 | 3833 |
| Fullerton avenue | Electricity | 3.98 | 35 | 423 |
| North Halsted street (Canal) | " | 3.82 | 78 | 942 |
| North Halsted street (River) | " | 3.30 | 111 | 1338 |
| South Halsted street | " | 4.63 | 289 | 3468 |
| Harrison street | " | 2.57 | 387 | 4641 |
| Indiana street | Hand | 5.33 | 174 | 2085 |
| Jackson boulevard | Electricity | 2.04 | 299 | 3584 |
| Kinzie street | " | 3.55 | 635 | 7614 |
| Lake street | " | 3.12 | 319 | 3827 |
| Laurel street | Hand | 9.59 | 5 | 56 |
| Loomis street | Electricity | 3.61 | 262 | 3018 |
| †Madison street | " | 3.14 | 324 | 3564 |
| Ninety-second street | Hand | 5.89 | 346 | 4137 |
| Ninety-fifth street | Electricity | 4.69 | 265 | 3188 |
| North avenue | " | 4.53 | 86 | 1027 |
| One Hundred-and-sixth street | Hand | 6.57 | 178 | 2135 |
| Polk street (now under construction) | | 0.00 | 0 | 0 |
| Randolph street | Electricity | 3.10 | 330 | 3967 |
| Riverdale | Hand | 0 | 0 | 0 |
| Rush street | Electricity | 3.00 | 636 | 7631 |
| ‡State street | " | 3.25 | 516 | 6153 |
| Taylor street | " | 3.18 | 285 | 3422 |
| Throop street | " | 3.26 | 278 | 3339 |
| Torrence avenue | Hand | 15.50 | 96 | 1159 |
| Twelfth street | Steam | 4.12 | 275 | 3308 |
| Twenty-second street | Electricity | 3.08 | 305 | 3658 |
| Thirty-fifth street | Hand | 8.10 | 142 | 1704 |
| §Van Buren street | Electricity | 4.02 | 341 | 3588 |
| Webster avenue | Hand | 5.46 | 341 | 4091 |
| Weed street | " | 12.00 | 101 | 1213 |
| Wells street | Electricity | 2.92 | 466 | 5598 |
| North Western avenue | " | 3.55 | 20 | 190 |
| South Western avenue | Hand | 2.34 | 1 | 9 |

* Bridge taken out October 30th, 1909. Total swings are for 9½ months.

† Out of commission from November 25th, 1909, for 3 or 4 months.

‡ Out of commission July 20th to Aug. 5th, 1909, inclusive, on account of repairs.

§ Out of commission from April 29th to June 17th, 1909, inclusive, on account of repairs.

## HARBOR DIVISION.

ROBERT J. MADDEN, ASSISTANT ENGINEER, IN CHARGE; CAPTAIN WALTER SCOTT, HARBOR MASTER; CAPTAIN F. B. HIGGIE, VESSEL DISPATCHER.

This Division has supervision over the Harbor of the City of Chicago, which consists of the Chicago River, its branches, forks and slips, the Calumet River, its branches, forks and slips, and Lake Michigan from the north to the south boundary lines of the City and for three miles from the shore into the lake, and has sanitary jurisdiction for a distance of eight miles from the shore lines.

During the year 1909 permits were issued for the following work:

### PERMITS ISSUED FOR THE CONSTRUCTION OF NEW DOCKS.

| LOCATION OF WORK. | Number of permits. | Lineal feet constructed. | Fees collected. |
|---|---|---|---|
| Main Chicago River | ....... | ........... | .......... |
| South Branch of Chicago River | 1 | 260. | $65.00 |
| South Branch of Chicago River, Sanitary District Work | 3 | 2,600. | .......... |
| North Branch of Chicago River | ....... | ........... | .......... |
| Calumet River | 1 | 80. | 20.00 |
| Lake Michigan, including Illinois Steel Co. Grant from State of Illinois | 6 | 10,665.3 | 10.00 |
| Total | 11 | 13,605.3 | $95.00 |

### PERMITS ISSUED FOR THE REBUILDING OF OLD DOCKS.

| LOCATION OF WORK. | Number of permits. | Lineal feet rebuilt. | Fees collected. |
|---|---|---|---|
| Main Chicago River | 6 | 1,559.50 | $ 389.88 |
| South Branch of Chicago River | 33 | 6,190.00 | 1,537.50 |
| South Branch of Chicago River for State of Illinois | 1 | 605.00 | .......... |
| South Side of Illinois and Michigan Canal | 1 | 130.00 | .......... |
| North Branch of Chicago River | 43 | 7,999.00 | 1,999.75 |
| Calumet River | 2 | 130.00 | 32.50 |
| Lake Michigan | 1 | 410.00 | 102.50 |
| Total | 87 | 17,023.50 | $4,062.13 |

### PERMITS ISSUED FOR THE REPAIRING OF OLD DOCKS.

| LOCATION OF WORK. | Number of permits. | Lineal feet repaired. | Fees collected. |
|---|---|---|---|
| Main Chicago River | 5 | 140. | $ 17.50 |
| South Branch of Chicago River | 9 | 821. | 102.58 |
| North Branch of Chicago River | 6 | 830. | 103.75 |
| Calumet River | 1 | 500. | 62.50 |
| Lake Michigan | 3 | 530. | 66.25 |
| Total | 24 | 2,821. | $352.58 |

## SUMMARY OF PERMITS ISSUED FOR DOCK WORK DURING THE YEAR 1909.

| KIND OF WORK. | Total number of permits. | Total lineal feet. | Total fees collected. |
|---|---|---|---|
| New Construction | 11 | 13,605.3 | $ 95.00 |
| Rebuilding | 87 | 17,023.5 | 4,062.13 |
| Repairing | 24 | 2,821.0 | 352.58 |
| Total | 122 | 33,449.8 | $4,509.71 |

## PERMITS ISSUED FOR DREDGING DURING THE YEAR 1909.

| LOCATION OF WORK. | Number of permits. | Fees collected. |
|---|---|---|
| Main Chicago River, private work | 5 | $ 32.00 |
| North Branch of Chicago River, private work | 3 | 16.00 |
| North Branch of Chicago River, U. S. Govt. work | 13 | .......... |
| North Branch of Chicago River, city work | 1 | .......... |
| South Branch of Chicago River, private work | 18 | 160.00 |
| South Branch of Chicago River, U. S. Govt. work | 6 | .......... |
| South Branch of Chicago River, San. Dist. and Canal | 9 | .......... |
| South Branch of Chicago River, city work | 2 | .......... |
| Calumet River, private work | 15 | 224.00 |
| Calumet River, U. S. Govt. work | 4 | .......... |
| Lake Michigan, private work | 5 | 64.00 |
| Lake Calumet, for manufacturing purposes | 1 | .......... |
| Total | 82 | $496.00 |

## DISTRIBUTION OF TIME REQUIRED TO COMPLETE THE DREDGING WORK.

| LOCATION OF WORK | Number |  | Days. |  |  |  |
|---|---|---|---|---|---|---|
|  | of permits. | Total Days. | Sanitary. Dist. | United States. | Private Dredg'g. | City Work. |
| Main Chicago River | 5 | 8 | ........ | ........ | 8 | ........ |
| North Branch Chicago River | 17 | 712 | ........ | 706 | 4 | 2 |
| South Branch Chicago River | 35 | 582 | 252 | 271 | 40 | 19 |
| Calumet River. | 19 | 239 | ........ | 183 | 56 | ........ |
| Lake Michigan. | 5 | 16 | ........ | ........ | 16 | ........ |
| Lake Calumet. | 1 | 286 | ........ | ........ | 286 | ........ |
| Total | 82 | 1,843 | 252 | 1,160 | 410 | 21 |

## PERMITS ISSUED FOR TOWING SCOWS LOADED WITH OTHER THAN DREDGED MATERIAL DURING THE YEAR 1909.

| LOCATION OF WORK. | Number of permits. | Fees collected. |
|---|---|---|
| Main Chicago River | 9 | $ 72.00 |
| North Branch Chicago River | 17 | 340.00 |
| South Branch Chicago River | 25 | 372.00 |
| Total | 51 | $784.00 |

## SUMMARY OF FEES COLLECTED DURING THE YEAR 1909.

| | |
|---|---|
| For Docking Permits | $4,509.71 |
| For Dredging Permits | 496.00 |
| For Towing Permits | 784.00 |
| Total | $5,789.71 |

## EXPENDITURE FOR IMPROVEMENTS OF THE HARBORS OF CHICAGO, FOR THE YEAR 1909, ARE AS FOLLOWS:

| | |
|---|---|
| City of Chicago | $ 54,532.64 |
| Sanitary District | 30,863.22 |
| United States Government | 579,590.47 |
| Total | $664,986.33 |

## TABLE SHOWING SUMMARY OF DREDGING AND DOCKING.

| LOCATION | BREAKWATERS | | DREDGE WORK | | | DOCK WORK—FEET | | | | Cost Dollars |
|---|---|---|---|---|---|---|---|---|---|---|
| | New | Rebuilding or Repairing | Rock, Cubic Yards | Hardpan, Cubic Yards | Earth, Cubic Yds. (Scow) | New Con-struction | Rebuild-ing | Repair-ing | Totals | |
| Chicago River—North Branch. | | | | | | | | | | |
| Private work | | | | | 4,000 | | 7,999 | 830 | 8,829 | |
| Contract work for City of Chicago | | | | | 31,168 | | 52 | | | $ 9,509.30 |
| U. S. Government work | | | | | 1,215,188 | | | | | 202,701.51 |
| Totals | | | | | 1,250,356 | | 8,051 | 830 | 8,829 | $212,210.81 |
| Chicago River—South Branch. | | | | | | | | | | |
| Private work | | | | | 40,000 | 260 | 6,925 | 821 | 8,006 | |
| Contract work for City of Chicago | | | | | 21,892 | | 272 | | 272 | $ 10,009.95 |
| U. S. Government work | | | 38,664.6 | 3,195.3 | 320,817 | | | | | 228,379.93 |
| Sanitary District work | | | | | 148,320 | | | 787.4 ft. dock re movals | | 30,863.22 |
| Totals | | | 38,664.6 | 3,195.3 | 531,029 | 260 | 7,197 | 821 | 8,278 | $269,253.10 |
| Main Chicago River. | | | | | | | | | | |
| Private work | | | | | 8,000 | | 1,559.5 | 140 | 1,699.5 | |
| Contract work, Street Dept. | | | | | | 60 | | | | $ 2,256.39 |
| U. S. Government work | | | | | | | | | | |
| Totals | | | | | 8,000 | 60 | 1,559.5 | 140 | 1,699.5 | $ 2,256.39 |
| Calumet River. | | | | | | | | | | |
| Private work | | | | | 56,000 | 80 | 130 | 500 | 710 | |
| Contract work, Street Dept. | | | | | | 78 | | | | $ 498.00 |
| U. S. Government work | | | | | 922,443 | | | | | 144,746.03 |
| Totals | | | | | 978,443 | 158 | 130 | 500 | 710 | $145,244.03 |
| Lake Michigan. | | | | | | | | | | |
| Private work | | | | | 16,000 | 10,665.3 | 410 | 530 | 11,605.3 | |
| Contract work for City of Chicago | | | | | | 366.0 | | | 366.0 | $ 1,419.00 |
| U. S. Government work | | { Misc. Repairs | | | | | | | | 3,763.00 |
| Totals | | | | | 16,000 | 11,031.3 | 410 | 530 | 11,971.3 | $ 5,182.00 |
| **Grand Total** | | | 38,664.6 | 3,195.3 | 2,783,828 | 11,509.3 | 17,347.5 | 2,821 | 31,487.8 | $634,146.33 |

### HARBOR IMPROVEMENTS MADE BY THE CITY OF CHICAGO DURING THE YEAR 1909.

Under various contracts the City of Chicago rebuilt the river docks at the following locations:

| | |
|---|---|
| North Sangamon street, 52 lineal feet @ $18.50 per foot....... | $ 962.00 |
| North Branch street, 81 " " @ 17.80 " " ....... | 1,441.80 |
| Lumber street, east side Sampson slip, 72 lineal feet @ $24.30 per foot, including necessary dredging .................... | 1,749.60 |
| Slip "A," in front of City pipe yards, 202 lineal feet @ $19.35 per foot .............................................. | 3,908.70 |
| Main Chicago river, next east of Rush street, for Bureau of Streets, 60 lineal feet .................................. | 2,256.39 |
| 106th street and Calumet River, 78 lineal feet, total cost...... | 498.00 |

Bulkhead protections for protecting the street ends were constructed at the following locations:

| | |
|---|---|
| Hollywood avenue and Lake Michigan, 80 lineal feet, total cost. | $ 475.00 |
| Rosemont " " " " 90 " " " " . | 470.00 |
| Glenlake " " " " 96 " " " " . | 474.00 |
| City property in front of Rogers Park pumping station at Kenilworth avenue, 100 lineal feet, total cost .................. | 479.00 |

### DREDGING AND REMOVAL OF HARBOR OBSTRUCTIONS.

A contract was awarded to Fitz Simons & Connell Company for the removal of 1,973 cubic yards of silt and sewage deposit (scow measurement) from the north end of Slip "A" of the South Branch of the Chicago river, west of Ashland avenue. The slip was dredged to give a uniform depth of 16 feet of water, at a cost of $453.79.

In order that the dredging could be completed satisfactorily, it was necessary to remove the superstructure of the old Washington street bridge that rested on pile foundations in front of the City pipe yard on the east side of the slip.

FULLER STREET.—The bridge over the South Fork of the South Branch of the Chicago river at this street was removed this year, and the old center pier and draws were dredged to a depth of —23 feet, Chicago datum. Approximately 12,436 cubic yards of material were dredged, at a total cost of $1,852.96.

POLK STREET.—7,483 cubic yards of material were dredged from the river at the new bridge at a cost of $2,244.90.

ERIE STREET.—About 23,615 cubic yards were dredged from the draw of this bridge, at a cost of $5,903.75.

KINZIE STREET.—About 7,553 cubic yards, at a total cost of $2,643.55, were removed from the river in the draw of the new bridge, which was completed during the early part of this year under the supervision of the Bridge Division.

A number of notices were served on owners of dock property along the north and south branches of the Chicago river, notifying them that their docks were in need of repairs and ordering them to make the necessary repairs within reasonable time, under penalty of being prosecuted and fined if the notices be not complied with. By complying with the notices many docks were made safe and serviceable by the owners.

An obstruction of long standing on the west side of the North Branch, next south of Bradley street, produced to the river, was removed. A strip of land about 100 feet long by 10 feet wide was cut off and a dock was constructed on correct line, and greatly improved conditions at this point.

A change in the dock line on the east side of the North Branch of the river, next north of Indiana street, was recommended by this Division, and was approved by the City Council Committee on Harbors, Wharves and Bridges. The old dock line at this location had a very objectionable angle that would not permit of a vessel being up at the dock without entirely blocking the east draw of Indiana street bridge. With the consent of the owner of the property, an ordinance was passed by the City Council which legalized a new dock line at a point 8 feet east of the old dock line, thereby increasing the width of the river at this point. A new dock was constructed and the river was dredged to conform to the new line, and by the change made at this point vessels can load or unload at the dock without obstructing the east draw of the bridge.

The United Breweries Company, owner of dock property on the east side of the North Branch of the Chicago river, about 210 feet north of Webster avenue, removed their dock at this point in order to rebuild the same on the original dock line as established in 1873. A plat showing the original dock line and the encroachment of the river as formed by the dock as built, and a notice to remove and rebuild the same, was served on the owners in May, 1909, and in compliance therewith they immediately removed the encroachment and built a new dock.

## HARBOR IMPROVEMENT WORK BY THE UNITED STATES GOVERNMENT DURING THE CALENDAR YEAR 1909.

OUTER CHICAGO HARBOR.—The work done consisted in repairs to the easterly end of the exterior breakwater at a cost of $3,263.24.

CHICAGO RIVER.—The North Branch was dredged to a depth of 21.0 feet below City datum, and to within 20 feet of the existing docks, from the junction of the two branches to a point about 800 feet south of Belmont avenue, except that portion from a point about 520 feet below to a point about 1,580 feet above the Fullerton avenue bridge, at which place the bottom consists of rock, with a least depth of about 16 to 17 feet.

In the North Branch there were removed in all 1,127,214 cubic yards of dredged materials at a cost of $187,745.93.

In the South Fork of the South Branch there were removed 206,580 cubic yards of dredged materials at a cost of $63,189.36; 38,664.6 cubic yards of rock at a cost of $140,006.33; and 3,195.3 cubic yards of hardpan at a cost of $5,192.76. The work was done under two contracts, dated respectively May 28th and October 28th, 1908.

The contract prices under the first contract were: Dredging in the North Branch, 17¾ cents per cubic yard; in the South Fork of the South Branch, 29 cents per cubic yard; rock $4.80 and hardpan $2.40 per cubic yard. Under the second contract: Dredging in the North Branch, 16 cents per cubic yard; in the South Fork of the South Branch, dredging 33 cents per cubic yard, rock and hardpan $4.25 per cubic yard. Under each of the contracts half rate was paid for materials removed from the South Fork between 1 and 2 feet below the established grade, which in this fork was 23 feet below City datum, or about 21 feet below hydraulic grade.

From the north turning basin there was dredged 87,974 cubic yards of material at 17 cents per cubic yard, at a total cost of $14,955.58, and to an average depth of 21 feet. From south turning 114,237 cubic yards was dredged at 17½ cents per cubic yard, at a total cost of $19,991.48, and to an average depth of 23 feet.

At the Archer avenue bridge the depth of water is only about 20 to 21 feet, owing to the presence of a water pipe tunnel which belongs to the City, which interferes with the dredging at this point. Arrangements are being made to remove the tunnel.

OUTER CALUMET HARBOR.—Minor repairs were made on breakwater, which had been damaged in various places. The repair work was done at a cost of about $500.

CALUMET RIVER.—Dredging to a depth of 17 feet below City datum and to a width of 200 feet was completed from 124th street to a point about 400 feet below the "Forks"; 540,813 cubic yards of material were removed at a total cost of $117,322.65. The contract price was 22.9 cents per cubic yard, measured in place, and half price for materials removed between 1 and 2 feet below the established grade.

Turning Basin No. 1, near 93rd street, was completed on May 27, 1909, by the removal of 219,387 cubic yards of dredged material at a cost of $27,423.38. The contract price was 12.5 cents per cubic yard, scow measurement.

SANITARY DISTRICT WORK ON HARBOR.—In continuation of the work necessary to secure an average width of 200 feet of waterway along the South Branch of the Chicago River, which has already improved conditions affecting vessel movements in that river, the Sanitary District cut off a large tract of land south of 12th street on the west side of the South Branch in front of the Iowa and City elevators, and removed the following material:

| | | | | |
|---|---|---|---|---|
| 109,156 | cubic yards dredging.............. | @ 16½c | $18,010.74 | |
| 39,164 | " " " .............. | @ $15^9/_{10}$c | 6,227.08 | $24,237.82 |
| 787.4 | ft. old dock pulled and removed... | @ $1.75 | 1,377.95 | |
| 2,691 | old piles pulled and removed.... | @ 1.95 | 5,247.45 | 6,625.40 |

which totals 148,320 cubic yards scow measurement at a cost of $30,863.22, in which is included the cost of removing the old dock, and the pulling and removal of the old piles, which latter work if merged in the price for dredging would bring that to about 20.8 cents per cubic yard by scow measurement.

## COMMERCE BY LAKE.

### TONNAGE—CITY OF CHICAGO, YEAR 1909.

ENTRANCES.

| ENTERED AT | NO. OF VESSELS. | TONNAGE. |
|---|---|---|
| Chicago River | 5,113 | 4,547,801 |
| Calumet River | 898 | 3,124,234 |
| Totals | 6,011 | 7,672,035 |

| CLEARED AT — CLEARANCES. | | |
|---|---|---|
| Chicago River | 4,970 | 4,344,274 |
| Calumet River | 1,031 | 3,344,288 |
| Totals | 6,001 | 7,688,562 |

SUMMARY.

| ENTERED AND CLEARED AT | | |
|---|---|---|
| Chicago River, total trade | 10,083 | 8,892,075 |
| Calumet River, total trade | 1,929 | 6,468,522 |
| City of Chicago, total lake trade. | 12,012 | 15,360,597 |

AVERAGE CARGO.

| | | |
|---|---|---|
| Chicago River | 882 | tons |
| Calumet River | 3,353 | " |
| City of Chicago | 1,279 | " |

From the above it appears that, compared with the trade by lake for the year 1908, we have for the whole City gained 816 vessels with a net gain of 1,068,939 tons over the total lake tonnage for that year. This gain in the lake trade of the City is distributed in vessels and tonnage as follows:

Chicago River, gain over 1908, 766 vessels and 473,563 tons.
Calumet River, gain over 1908, 50 vessels and 595,394 tons.

Of the total trade of the City by lake, in vessels and tonnage, the Calumet river, our southern deep water port, has only a little over 16 per cent of the total number of vessels of our lake trade, yet this small number of vessels, because of their great average cargo of 3,353 tons each, handle over (42%) forty-two per cent of the tonnage of the whole city. Because the heavier draft vessels, trading through the Chicago River, have, in some instances, been replaced by lighter draft vessels, the average cargo for that river has increased nearly 2½ per cent from the average cargo of the vessels that used it in 1908, while the number of vessels using the Chicago River in 1909 has increased nearly (8¼%) eight and one-fourth per cent over the number for 1908.

## NUMBER OF ACCIDENTS PER MONTH WHICH RESULTED IN DAMAGE TO THE VARIOUS CITY BRIDGES AND THE TOTAL OF THE BILLS RENDERED FOR THE DAMAGES DURING EACH MONTH.

| MONTH | ACCIDENTS | DAMAGES |
|---|---|---|
| January.. | 5 | $0. 0 |
| February | 2 | 0.00 |
| March | 2 | 32.38 |
| April | 16 | 413.02 |
| May | 23 | 293.66 |
| June | 23 | 504.95 |
| July | 31 | 1,195.31 |
| August | 29 | 1,038.75 |
| September | 25 | 190.67 |
| October | 29 | 865.37 |
| November | 23 | 26.47 |
| December | 11 | 374.09 |
| Total | 219 | $4,934.67 |

## TABLE SHOWING ELEVATION OF SURFACE OF LAKE MICHIGAN IN FEET, REFERRED TO CITY DATUM, BY MONTHS OF YEAR 1909, FROM OBSERVATIONS TAKEN AT TWO-MILE CRIB.

| MONTHS. | Max. | Min. | Mean | Range. | REMARKS. | |
|---|---|---|---|---|---|---|
| January | 1.00 | —1.40 | —0.445 | 2.40 | Max. Jan. 31 | Min. Jan. 2 |
| February | 0.80 | —1.20 | —0.248 | 2.00 | " Feb. 14 | " Feb. 2 |
| March | 0.90 | —0.40 | 0.064 | 1.30 | " Mar. 3 | " Mar. 23 |
| April | 1.40 | —0.60 | 0.095 | 2.00 | " April 29 | " April 11 |
| May | 1.10 | 1.00 | 0.666 | 0.10 | " May 30 | " May 2 |
| June | 1.50 | 0.50 | 0.922 | 1.00 | " June 8 | " June 20 |
| July | 1.10 | 0.50 | 0.887 | 0.60 | " July 23 | " July 20 |
| August | 1.20 | 0.40 | 0.844 | 0.80 | " Aug. 31 | " Aug. 31 |
| September | 1.00 | 0.20 | 0.577 | 0.80 | " Sept. 4 | " Sept. 28 |
| October | 1.00 | —0.60 | 0.113 | 1.60 | " Oct. 8 | " Oct. 14 |
| November | 1.00 | —0.60 | 0.022 | 1.60 | " Nov. 22 | " Nov. 20 |
| December | 0.60 | —1.50 | —0.211 | 2.10 | " Dec. 13 | " Dec. 20 |
| Year 1909... | 1.50 | —1.50 | 0.274 | 3.00 | Max. June 8 | Min. Dec. 20 |

The following are the elevations of Lake Michigan in inches since the opening of the Sanitary District Canal under permit from the Secretary of War Elihu Root on May 8. 1899. Observations were taken at the two-mile crib and are referred to Chicago City Datum:

Year 1899, 6.36 inches above datum.
Year 1900, 1.44 inches above datum.
Year 1901, 4.68 inches above datum.
Year 1902, 0.48 inches above datum.
Year 1903, 1.80 inches above datum.
Year 1904, 7.92 inches above datum.
Year 1905, 9.36 inches above datum.
Year 1906, 10.44 inches above datum.
Year 1907, 10.68 inches above datum.
Year 1908, 9.06 inches above datum.
Year 1909, 3.29 inches above datum.

## LAKE COMMERCE OF CHICAGO, 1909.

| RECEIPTS | Chicago River | Calumet River | Total |
|---|---|---|---|
| Coal, hard .................... Ton | 573.866 | 216,893 | 790,759 |
| Coal, soft .................... " | 88,565 | 360,962 | 449,527 |
| Salt .......................... " | 242,634 | ............ | 242,634 |
| *Iron ore .................... " | 35,828 | 4,652,057 | 4,687,885 |
| Cement ........................ " | 16,430 | 60 | 16,490 |
| Lumber ........................ M. | 368,562 | 13,658 | 382,220 |
| Shingles ...................... " | 16,143 | ............ | 16,143 |
| Lath .......................... " | 5,363 | ............ | 5,363 |
| Posts ...................... Pieces | 380,178 | 29,000 | 409,178 |
| Railroad ties ................. " | 859,585 | 61,150 | 920,735 |
| Telegraph poles ............... " | 26,141 | 28,370 | 54,511 |
| Wood ....................... Cord | 2,667 | 1,548 | 4,215 |
| Copper ....................... Ton | 4,304 | 147 | 4,451 |
| Sugar ......................... " | 81,481 | ............ | 81,481 |
| Green fruit ................ Pkgs. | 4,748,040 | 2,500 | 4,750,540 |
| Wheat ...................... Bush. | 1,995,420 | 3,560,126 | 5,555,546 |
| Barley ........................ " | 41,000 | ............ | 41,000 |
| Oats .......................... " | ............ | 6,000 | 6,000 |
| Merchandise (unclassified)... Ton | 706.899 | 3.052 | 709,951 |

*NOTE.—This is exclusive of 1,878,851 tons of ore received at Gary, Ind.

## LAKE COMMERCE OF CHICAGO, 1909.

| SHIPMENTS | Chicago River | Calumet River | Total |
|---|---|---|---|
| Flour ....................... Bbls. | 2,584,175 | 481,494 | 3,065,669 |
| Wheat ...................... Bush. | 4,305,539 | 4,941,978 | 9,247,517 |
| Corn .......................... " | 12,435,875 | 14,298,901 | 26,734,776 |
| Oats .......................... " | 3,226,000 | 1,515,000 | 4,741,000 |
| Rye ........................... " | 10,000 | 35,000 | 45,000 |
| Barley ........................ " | 66,000 | 150,000 | 216,000 |
| Grass seeds .................. Ton | 3,090 | 275 | 3,165 |
| Mill stuff .................... " | 182,482 | 21,590 | 204,072 |
| Oil cake ...................... " | 2,810 | 120 | 2,930 |
| Broom corn ................. Bales | 5,247 | ............ | 5,247 |
| Lard ...................... Tierce | 3,828 | ............ | 3,828 |
| Tallow ........................ " | 1,996 | 75 | 2,071 |
| Pork and cured meats........ Bbls. | 3,991 | ............ | 3,991 |
| Wool and hair .............. Sacks | 42,371 | 8,996 | 51,367 |
| Oil ......................... Bbls. | 22,925 | 127,358 | 150,283 |
| Manufactured iron ............ Ton | 3,243 | 53,667 | 56,910 |
| Merchandise (unclassified).... " | 370,919 | 28,731 | 409,784 |

## COMMERCE BY LAKE AND CANAL—CITY OF CHICAGO.

**From 1860 to 1909 by Years, with Population 1831 to 1909 Compiled from Official Records of the Department.**

| Year | VESSELS BY LAKE. | | | BY ILL. & MICH. CANAL | | | Population | Remarks | |
|---|---|---|---|---|---|---|---|---|---|
| | Total No. | Total Tonnage | Average, Cargo, Ton | Boats No. | Tonnage | Tolls, Dollars | | | |
| 1860 | ...... | ......... | ......... | 201 | 367,437 | 138,554 | 109,460 | | |
| 1861 | ...... | ......... | ......... | 194 | 547,295 | 218,040 | 120,000 | | |
| 1862 | 14,687 | 3,847,246 | 262 | 211 | 673,590 | 264,647 | 137,030 | | |
| 1863 | 17.135 | 4,333,832 | 252 | 240 | 619,599 | 210.386 | 150,000 | Population, Prior Years | |
| 1864 | 17,762 | 4,339,770 | 244 | 228 | 510,286 | 156,607 | 161,288 | | |
| 1865 | 20,179 | 4,199,135 | 208 | 228 | 616,140 | 300,810 | 178,492 | | |
| 1866 | 22,199 | 4,620,092 | 208 | 230 | 746,815 | 202,958 | 200,418 | | |
| 1867 | 24,870 | 5,101,203 | 209 | 209 | 746,954 | 252,231 | 225,000 | 1831 | 60 |
| 1868 | 26,399 | 6,005,403 | 265 | 218 | 737,827 | 215,720 | 252,054 | 1832 | 600 |
| 1869 | 27,602 | 6,273,346 | 227 | 219 | 817,738 | 238,759 | 280,000 | 1833 | 350 |
| 1870 | 25,172 | 6,033,207 | 239 | 179 | 585,970 | 149,635 | 298,700 | 1834 | 1,800 |
| 1871 | 24,632 | 6,178,336 | 251 | 186 | 628,975 | 159,050 | 334,270 | 1835 | 3,265 |
| 1872 | 25,353 | 6,077,542 | 239 | 173 | 783,641 | 165.874 | 367,396 | 1836 | 4,000 |
| 1873 | 23,734 | 6,564,542 | 239 | 172 | 849,533 | 166,641 | 380,000 | 1837 | 4,179 |
| 1874 | 21,547 | 6,329,711 | 294 | 152 | 712,020 | 144,831 | 395,400 | 1838 | 4,000 |
| 1875 | 21,095 | 6,279,055 | 298 | 142 | 676,025 | 107,081 | 407,000 | 1839 | 4,200 |
| 1876 | 19,245 | 6,167,736 | 320 | 146 | 691,946 | 113,293 | 420,000 | 1840 | 4,470 |
| 1877 | 20,617 | 6,585,415 | 321 | 145 | 605,912 | 96,913 | 439,776 | 1841 | 5,500 |
| 1878 | 20,984 | 7,239,673 | 345 | 140 | 598,792 | 84,330 | 450,000 | 1842 | 6,590 |
| 1879 | 23,873 | 7,757,395 | 325 | 136 | 669,559 | 89,064 | 475,000 | 1843 | 7,580 |
| 1880 | 25,520 | 9,154,351 | 345 | 133 | 751,360 | 92.296 | 503,298 | 1844 | 8,000 |
| 1881 | 26,005 | 8,762,247 | 337 | 133 | 826,133 | 85,130 | 540,000 | 1845 | 12,088 |
| 1882 | 26,977 | 9,754,949 | 362 | 132 | 1,011,287 | 85,947 | 560,693 | 1846 | 14,169 |
| 1883 | 23,982 | 7,790,337 | 325 | 132 | 925,575 | 77,975 | 580,000 | 1847 | 16,859 |
| 1884 | 22,826 | 7,508,696 | 330 | 134 | 956,721 | 77,102 | 630,000 | 1848 | 20,023 |
| 1885 | 21,542 | 7,306,222 | 339 | 135 | 827,355 | 66,800 | 664,634 | 1849 | 23,047 |
| 1886 | 22,372 | 7,877,080 | 352 | 130 | 808,019 | 62.516 | 704,000 | 1850 | 28,296 |
| 1887 | 23,972 | 8,749,852 | 365 | 132 | 742,074 | 58,024 | 760,000 | 1851 | 34,000 |
| 1888 | 22,095 | 8,890,658 | 402 | 127 | 751,055 | 56,028 | 830,000 | 1852 | 38,734 |
| 1889 | 21,788 | 10,267,831 | 471 | 114 | 917,047 | 60,605 | 1.100,000 | 1853 | 60,662 |
| 1890 | 20,133 | 10,116,051 | 502 | 104 | 742,392 | 65,112 | 1,208,669 | 1854 | 65,872 |
| 1891 | 19,680 | 10,862,898 | 522 | 97 | 641,156 | 49,557 | 1,323,339 | 1855 | 80,023 |
| 1892 | 21,123 | 11,780,393 | 565 | 95 | 783,288 | 54,937 | 1,438,010 | 1856 | 86,000 |
| 1893 | 17.044 | 10,788,029 | 692 | 82 | 529,816 | 38,702 | 1,502,868 | 1857 | 93,000 |
| 1894 | 16,202 | 10,284,178 | 635 | 85 | 617,811 | 44,928 | 1,567,727 | 1858 | 84,000 |
| 1895 | 18,232 | 12,631,180 | 693 | 83 | 591,407 | 39.106 | 1,584,070 | 1859 | 94,000 |
| 1896 | 16,999 | 12,965,812 | 763 | 67 | 446,762 | 34,543 | 1,600.413 | | |
| 1897 | 17,865 | 14.277,235 | 799 | 64 | 600,000 | 41,000 | 1,637.000 | | |
| 1898 | 18,512 | 15,116,426 | 817 | 64 | 395,017 | 38,570 | 1,670,000 | | |
| 1899 | 16.174 | 12,599,239 | 779 | 64 | 469,352 | 41,022 | 1,698,575 | | |
| 1900 | 16,976 | 13,990,894 | 824 | 60 | 121,759 | 20,866 | 1,758,000 | | |
| 1901 | 16,274 | 13,634,904 | 838 | 41 | 81,456 | 11,151 | 1,820,000 | | |
| 1902 | 15,754 | 14,239,398 | 904 | ...... | ......... | ....... | 1,885,000 | | |
| 1903 | 14,803 | 15,026,014 | 1,015 | ...... | ......... | ....... | 1,950,000 | | |
| 1904 | 12,904 | 12,746,078 | 988 | ...... | ......... | ....... | 1,962,251 | | |
| 1905 | 13,963 | 14,499,900 | 1,038 | ...... | ......... | ....... | 2,019,968 | | |
| 1906 | 13,597 | 15,405,200 | 1,183 | ...... | ......... | ....... | 2,079,841 | | |
| 1907 | 12,836 | 15,649,035 | 1,219 | ...... | ......... | ....... | 2,139,713 | | |
| 1908 | 11,196 | 14,291,640 | 1,276 | ...... | ......... | ....... | 2,195.272 | | |
| 1909 | 12,012 | 15,360,597 | 1,279 | ...... | ......... | ....... | 2,253.707 | | |

## MOVEMENT OF VESSELS IN CHICAGO RIVER.

| 1909 | BRIDGE SERVICE | | | | AVERAGES | | | | PERCENTAGE | |
|---|---|---|---|---|---|---|---|---|---|---|
| THROUGH BRIDGES | Hours in Service | Hours Open | Vessels Passed | Bridge Swings | Number of Vessels Per Day | Time Open Per Swing in Minutes | Time Open Per Hour in Minutes | Time Open Per Day in Minutes | Closed | Opened |
| Rush Street | 3,300 | 161 | 3,747 | 3,290 | 13.63 | 2.93 | 2.92 | 35.04 | 95.14 | 4.86 |
| Lake Street | 3,300 | 98.5 | 2,090 | 1,921 | 7.60 | 3.07 | 1.79 | 21.48 | 97.02 | 2.98 |
| Eighteenth Street | 3,300 | 101 | 1,879 | 1,735 | 6.83 | 3.49 | 1.83 | 21.96 | 96.95 | 3.05 |

NOTE—This table gives time only for actual service per telephone operator at the designated bridges for 275 days at 12 hours per day, during the navigation season only.

## 1909 DETAILED STATEMENT OF VESSELS PASSING BRIDGES—CHICAGO RIVER.

| MONTHS | RUSH STREET BRIDGE | | | LAKE STREET BRIDGE | | | EIGHTEENTH STREET BRIDGE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of Vessels | Number of Swings | Number of Minutes | Number of Vessels | Number of Swings | Number of Minutes | Number of Vessels | Number of Swings | Number of Minutes |
| April | 227 | 214 | 554 | 129 | 118 | 356 | 145 | 136 | 454 |
| May | 357 | 325 | 889 | 240 | 199 | 621 | 212 | 207 | 677 |
| June | 505 | 436 | 1,142 | 240 | 224 | 621 | 127 | 119 | 398 |
| July | 744 | 624 | 1,884 | 278 | 254 | 831 | 190 | 170 | 606 |
| August | 685 | 573 | 1,769 | 285 | 257 | 841 | 289 | 256 | 924 |
| September | 296 | 262 | 809 | 306 | 278 | 838 | 301 | 274 | 949 |
| October | 380 | 346 | 988 | 256 | 234 | 726 | 267 | 247 | 886 |
| November | 366 | 335 | 1,032 | 215 | 229 | 684 | 229 | 216 | 762 |
| December | 187 | 175 | 543 | 141 | 128 | 388 | 119 | 110 | 409 |
| Total | 3,747 | 3,290 | 9,610 | 2,090 | 1,921 | 5,909 | 1,879 | 1,735 | 6,065 |

NOTE—This table gives day only of 12 hours.

## MONTHLY AND ANNUAL MEANS, MAXIMUM AND MINIMUM, IN DEGREES FAHRENHEIT.

| M'THLY | Maximum | Minimum. | MEANS. |  |  | REMARKS. |  | Mean of lake water at 2-mile crib |
|---|---|---|---|---|---|---|---|---|
|  |  |  | Maximum | Minimum. | Monthly. |  |  |  |
| January .. | 65.0 | -10.0 | 35.3 | 22.3 | 28.8 | Max. Jan. 23 | Min. Jan. 6 | 32.45 |
| February . | 57.0 | 12.0 | 39.2 | 25.6 | 32.4 | " Feb. 4 | " Feb. 25 | 32.17 |
| March .... | 55.0 | 14.0 | 41.4 | 30.5 | 36.0 | " Mar. 1, 26 | " Mar. 17 | 33.32 |
| April ..... | 74.0 | 25.0 | 52.1 | 38.0 | 45.1 | " April 5 | " April 10 | 39,83 |
| May ....... | 86.0 | 32.0 | 62.9 | 48.9 | 55.9 | " May 5 | " May 1 | 48.19 |
| June ....... | 87.0 | 48.0 | 73.2 | 59.9 | 66.6 | " June 22-27 | " June 14-15 | 56.30 |
| July ....... | 92.0 | 55.0 | 79.1 | 65.5 | 72.3 | " July 29 | " July 3 | 65.38 |
| August ... | 93.0 | 59.0 | 80.7 | 69.0 | 74.8 | " Aug. 8 | " Aug. 31 | 70.58 |
| September | 89.0 | 47.0 | 69.8 | 58.3 | 64.0 | " Sept. 13 | " Sept. 28 | 64.13 |
| October ... | 76.0 | 29.0 | 56.9 | 44.2 | 50.6 | " Oct. 9 | " Oct. 13,14,28 | 52.58 |
| November | 71.0 | 28.0 | 55.4 | 41.6 | 48.5 | " Nov. 11 | " Nov. 18, 23 | 46.37 |
| December | 55.0 | -7.0 | 28.1 | 15.2 | 21.7 | " Dec. 5 | " Dec. 30 | 34.80 |
| Year 1909.. | 93.0 | -10.0 | 56.18 | 43.25 | 49.72 | Max. Aug. 8 | Min. Jan. 6 | 48.01 |

## TABLE OF MAXIMUM, MINIMUM AND MEAN TEMPERATURE DAILY AT CHICAGO DURING THE YEAR 1909—DEGREES FAHRENHEIT.

| DATE. | January. |  |  | February. |  |  | March. |  |  | April. |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. | Mean |
| 1..... | 24 | 14 | 19 | 32 | 13 | 22 | 55 | 33 | 44 | 44 | 37 | 40 |
| 2..... | 38 | 20 | 29 | 47 | 26 | 36 | 47 | 34 | 40 | 47 | 37 | 42 |
| 3..... | 49 | 38 | 44 | 42 | 33 | 38 | 41 | 32 | 36 | 47 | 37 | 42 |
| 4..... | 54 | 41 | 48 | 57 | 37 | 47 | 33 | 29 | 31 | 48 | 37 | 42 |
| 5..... | 45 | 3 | 24 | 53 | 32 | 42 | 42 | 27 | 34 | 74 | 48 | 61 |
| 6..... | 3 | -10 | -4 | 40 | 27 | 34 | 45 | 36 | 40 | 70 | 43 | 56 |
| 7..... | 17 | -3 | 7 | 44 | 34 | 39 | 41 | 33 | 37 | 55 | 41 | 48 |
| 8..... | 26 | 17 | 22 | 38 | 33 | 36 | 38 | 32 | 35 | 43 | 32 | 38 |
| 9..... | 34 | 26 | 30 | 47 | 15 | 31 | 53 | 33 | 43 | 34 | 27 | 30 |
| 10..... | 34 | 8 | 21 | 23 | 13 | 18 | 37 | 29 | 33 | 35 | 25 | 30 |
| 11..... | 11 | 6 | 8 | 35 | 12 | 24 | 30 | 23 | 36 | 57 | 34 | 46 |
| 12..... | 20 | 3 | 12 | 47 | 31 | 39 | 35 | 30 | 32 | 58 | 38 | 48 |
| 13..... | 27 | 14 | 20 | 34 | 28 | 31 | 40 | 28 | 34 | 40 | 35 | 38 |
| 14..... | 34 | 23 | 28 | 29 | 23 | 26 | 33 | 28 | 30 | 49 | 37 | 43 |
| 15..... | 35 | 24 | 30 | 24 | 20 | 22 | 40 | 26 | 33 | 57 | 42 | 50 |
| 16..... | 30 | 22 | 26 | 26 | 18 | 22 | 31 | 16 | 24 | 51 | 40 | 46 |
| 17..... | 31 | 25 | 28 | 33 | 12 | 22 | 33 | 14 | 24 | 62 | 41 | 52 |
| 18..... | 34 | 25 | 30 | 42 | 30 | 36 | 44 | 30 | 37 | 70 | 41 | 56 |
| 19..... | 37 | 28 | 32 | 40 | 35 | 38 | 44 | 34 | 39 | 44 | 39 | 42 |
| 20..... | 38 | 29 | 34 | 38 | 32 | 35 | 36 | 31 | 34 | 45 | 39 | 42 |
| 21..... | 52 | 38 | 45 | 51 | 32 | 42 | 36 | 31 | 34 | 53 | 40 | 46 |
| 22..... | 59 | 51 | 55 | 41 | 36 | 38 | 36 | 29 | 32 | 54 | 38 | 46 |
| 23..... | 65 | 56 | 60 | 42 | 34 | 38 | 53 | 34 | 44 | 44 | 34 | 39 |
| 24..... | 62 | 37 | 50 | 36 | 15 | 26 | 47 | 35 | 41 | 64 | 42 | 53 |
| 25..... | 41 | 33 | 37 | 30 | 12 | 21 | 44 | 35 | 40 | 57 | 39 | 48 |
| 26..... | 44 | 32 | 38 | 51 | 30 | 40 | 55 | 32 | 44 | 54 | 38 | 46 |
| 27..... | 45 | 35 | 40 | 40 | 29 | 34 | 44 | 35 | 40 | 55 | 44 | 50 |
| 28..... | 40 | 34 | 37 | 36 | 25 | 30 | 43 | 32 | 38 | 46 | 40 | 43 |
| 29..... | 37 | 10 | 24 | .... | .... | .... | 40 | 35 | 38 | 53 | 36 | 44 |
| 30..... | 10 | 5 | 8 | .... | .... | .... | 46 | 32 | 39 | 53 | 38 | 44 |
| 31..... | 18 | 5 | 12 | .... | .... | .... | 40 | 36 | 38 | .... | .... | ..... |
| Means. | 35.3 | 22.3 | 28.8 | 39.2 | 25 6 | 32.4 | 41.4 | 30.5 | 36.0 | 52.1 | 38.0 | 45.1 |

## TABLE OF MAXIMUM, MINIMUM AND MEAN TEMPERATURE DAILY AT CHICAGO DURING THE YEAR 1909—DEGREES FAHRENHEIT

| DATE. | May. | | | June | | | July | | | August | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. | Mean |
| 1..... | 38 | 32 | 35 | 70 | 58 | 64 | 75 | 70 | 72 | 81 | 70 | 76 |
| 2..... | 49 | 33 | 41 | 69 | 59 | 64 | 91 | 59 | 75 | 79 | 72 | 76 |
| 3..... | 51 | 35 | 43 | 64 | 57 | 60 | 63 | 55 | 59 | 81 | 72 | 76 |
| 4..... | 51 | 43 | 47 | 69 | 55 | 62 | 63 | 58 | 60 | 86 | 73 | 80 |
| 5..... | 86 | 51 | 68 | 68 | 56 | 62 | 65 | 59 | 62 | 80 | 73 | 76 |
| 6..... | 79 | 53 | 66 | 85 | 55 | 70 | 66 | 59 | 62 | 84 | 73 | 78 |
| 7..... | 58 | 48 | 53 | 60 | 53 | 56 | 74 | 63 | 68 | 84 | 74 | 79 |
| 8..... | 64 | 48 | 56 | 58 | 54 | 56 | 76 | 64 | 70 | 93 | 73 | 83 |
| 9..... | 51 | 42 | 46 | 58 | 53 | 56 | 88 | 66 | 77 | 81 | 72 | 76 |
| 10..... | 47 | 41 | 44 | 62 | 53 | 58 | 85 | 71 | 78 | 75 | 71 | 73 |
| 11..... | 57 | 42 | 50 | 66 | 57 | 62 | 80 | 70 | 75 | 79 | 68 | 74 |
| 12..... | 72 | 40 | 60 | 66 | 59 | 62 | 84 | 70 | 77 | 78 | 71 | 74 |
| 13..... | 75 | 61 | 68 | 79 | 65 | 72 | 84 | 66 | 75 | 77 | 70 | 74 |
| 14..... | 74 | 57 | 66 | 67 | 48 | 58 | 85 | 68 | 76 | 89 | 70 | 80 |
| 15..... | 79 | 58 | 68 | 65 | 48 | 56 | 86 | 71 | 78 | 85 | 72 | 78 |
| 16..... | 68 | 51 | 60 | 80 | 59 | 70 | 80 | 65 | 72 | 84 | 71 | 78 |
| 17..... | 60 | 49 | 54 | 70 | 55 | 62 | 85 | 66 | 76 | 75 | 68 | 72 |
| 18..... | 56 | 47 | 52 | 58 | 52 | 55 | 75 | 64 | 70 | 77 | 66 | 72 |
| 19..... | 59 | 48 | 54 | 76 | 55 | 66 | 69 | 63 | 66 | 82 | 69 | 76 |
| 20..... | 59 | 48 | 54 | 86 | 63 | 74 | 82 | 65 | 74 | 75 | 66 | 70 |
| 21..... | 57 | 50 | 54 | 78 | 70 | 74 | 87 | 65 | 76 | 72 | 65 | 68 |
| 22..... | 58 | 49 | 54 | 87 | 67 | 77 | 85 | 64 | 74 | 81 | 63 | 72 |
| 23..... | 56 | 48 | 52 | 86 | 69 | 78 | 72 | 63 | 68 | 86 | 67 | 76 |
| 24..... | 60 | 49 | 54 | 81 | 69 | 75 | 78 | 59 | 68 | 91 | 70 | 80 |
| 25..... | 58 | 51 | 54 | 82 | 66 | 74 | 85 | 65 | 75 | 85 | 72 | 78 |
| 26..... | 63 | 50 | 56 | 83 | 66 | 74 | 76 | 67 | 72 | 80 | 71 | 76 |
| 27..... | 68 | 51 | 60 | 87 | 72 | 80 | 74 | 65 | 70 | 83 | 71 | 77 |
| 28..... | 73 | 53 | 63 | 81 | 67 | 74 | 90 | 72 | 81 | 87 | 68 | 78 |
| 29..... | 70 | 55 | 62 | 76 | 66 | 71 | 92 | 77 | 84 | 68 | 60 | 64 |
| 30..... | 80 | 63 | 72 | 80 | 70 | 75 | 79 | 69 | 74 | 69 | 60 | 64 |
| 31..... | 75 | 60 | 68 | .... | .... | .... | 79 | 72 | 76 | 76 | 59 | 68 |
| Means. | 62.9 | 48.9 | 55.9 | 73.2 | 59.9 | 66.6 | 79.1 | 65.5 | 72.3 | 80.7 | 69.0 | 74.8 |

## TABLE OF MAXIMUM, MINIMUM AND MEAN TEMPERATURE DAILY AT CHICAGO DURING THE YEAR 1909—DEGREES FAHRENHEIT

| DATE | September | | | October | | | November | | | December | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. | Mean |
| 1..... | 62 | 51 | 56 | 60 | 51 | 56 | 65 | 52 | 58 | 51 | 41 | 46 |
| 2..... | 72 | 53 | 62 | 74 | 52 | 63 | 60 | 46 | 52 | 49 | 44 | 46 |
| 3..... | 67 | 56 | 62 | 63 | 59 | 61 | 65 | 44 | 54 | 53 | 44 | 48 |
| 4..... | 74 | 61 | 68 | 61 | 56 | 58 | 56 | 47 | 52 | 53 | 47 | 50 |
| 5..... | 62 | 58 | 60 | 61 | 55 | 58 | 58 | 49 | 54 | 55 | 19 | 37 |
| 6..... | 70 | 56 | 63 | 63 | 53 | 58 | 58 | 50 | 54 | 31 | 18 | 24 |
| 7..... | 68 | 59 | 64 | 74 | 56 | 65 | 65 | 51 | 58 | 32 | 6 | 19 |
| 8..... | 75 | 64 | 70 | 72 | 59 | 66 | 59 | 47 | 53 | 9 | 3 | 6 |
| 9..... | 71 | 65 | 68 | 76 | 60 | 68 | 51 | 41 | 46 | 13 | 2 | 8 |
| 10..... | 72 | 65 | 68 | 65 | 48 | 56 | 66 | 50 | 58 | 22 | 7 | 14 |
| 11..... | 73 | 66 | 70 | 50 | 38 | 44 | 71 | 58 | 64 | 31 | 24 | 28 |
| 12..... | 79 | 65 | 72 | 38 | 31 | 34 | 58 | 46 | 52 | 39 | 31 | 35 |
| 13..... | 89 | 71 | 80 | 45 | 29 | 37 | 70 | 51 | 60 | 39 | 29 | 34 |
| 14..... | 86 | 68 | 77 | 52 | 29 | 40 | 65 | 40 | 52 | 33 | 25 | 29 |
| 15..... | 72 | 59 | 66 | 44 | 34 | 39 | 44 | 31 | 38 | 29 | 11 | 20 |
| 16..... | 73 | 57 | 65 | 50 | 34 | 42 | 61 | 33 | 47 | 34 | 8 | 21 |
| 17..... | 71 | 61 | 66 | 49 | 40 | 44 | 35 | 29 | 32 | 17 | 3 | 10 |
| 18..... | 70 | 63 | 66 | 49 | 45 | 47 | 36 | 28 | 32 | 11 | −1 | 5 |
| 19..... | 71 | 60 | 66 | 50 | 44 | 47 | 53 | 36 | 44 | 13 | 2 | 8 |
| 20..... | 82 | 67 | 74 | 54 | 45 | 50 | 60 | 46 | 53 | 15 | 4 | 10 |
| 21..... | 74 | 64 | 69 | 64 | 53 | 58 | 57 | 40 | 48 | 18 | 11 | 14 |
| 22..... | 70 | 58 | 64 | 53 | 43 | 48 | 40 | 30 | 35 | 26 | 12 | 19 |
| 23..... | 65 | 51 | 58 | 47 | 39 | 43 | 39 | 28 | 34 | 24 | 12 | 18 |
| 24..... | 63 | 51 | 57 | 45 | 34 | 40 | 45 | 31 | 38 | 28 | 18 | 23 |
| 25..... | 61 | 52 | 56 | 55 | 37 | 46 | 52 | 39 | 46 | 31 | 23 | 27 |
| 26..... | 56 | 53 | 54 | 62 | 42 | 52 | 60 | 42 | 51 | 23 | 8 | 16 |
| 27..... | 58 | 50 | 54 | 52 | 35 | 44 | 63 | 48 | 56 | 18 | 8 | 13 |
| 28..... | 67 | 47 | 57 | 43 | 29 | 36 | 58 | 42 | 50 | 16 | 8 | 12 |
| 29..... | 59 | 50 | 54 | 50 | 38 | 44 | 41 | 37 | 39 | 10 | −2 | 4 |
| 30..... | 62 | 48 | 55 | 70 | 46 | 58 | 50 | 36 | 43 | 14 | −7 | 4 |
| 31..... | .... | .... | .... | 74 | 56 | 65 | .... | .... | .... | 32 | 12 | 22 |
| Means. | 69.8 | 58.3 | 64.0 | 56.9 | 44.2 | 50.6 | 55.4 | 41.6 | 48.5 | 28.1 | 15.2 | 21.7 |

## TABLE OF DAILY PRECIPITATION, CHICAGO
## YEAR 1909.

| Date. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1... | T | 0. | 0. | 0. | .08 | 0. | 0. | T | 0. | 0. | .53 | .01 |
| 2... | 0. | 0. | .01 | .01 | .08 | .46 | .87 | 0. | .22 | 0. | 0. | .13 |
| 3... | 0. | 0. | T | .01 | 0. | T | 0. | .01 | .29 | 0. | 0. | 0. |
| 4... | T | 0. | 0. | 0. | 0. | .86 | .03 | .01 | .01 | 0. | 0. | .20 |
| 5... | .02 | .81 | 0. | .07 | 0. | 0. | .09 | 0. | 0. | 0. | 0. | .50 |
| 6... | 0. | 0. | T | .68 | T | T | .03 | 0. | 0. | 0. | 0. | T |
| 7... | .13 | 0. | 0. | T | 0. | .87 | 0. | 0. | 0. | 0. | .55 | .55 |
| 8... | 0. | .60 | .43 | T | .23 | .83 | 0. | 0. | .05 | 0. | .14 | 0. |
| 9... | T | .42 | .16 | .03 | .31 | .09 | 0. | .02 | .06 | T | 0. | 0. |
| 10... | T | T | T | 0. | 0. | T | 0. | 0. | 0. | .25 | T | .06 |
| 11... | 0. | 0. | 0. | 0. | 0. | 0. | T | .59 | 0. | .08 | .12 | .14 |
| 12... | 0. | 0. | T | 1.16 | .03 | .15 | T | .23 | 0. | T | .05 | .84 |
| 13... | .02 | T | T | .15 | .02 | T | 0. | .09 | 0. | 0. | .02 | .59 |
| 14... | T | .66 | T | T | .46 | T | 0. | 3.49 | 1.10 | 0. | .05 | .02 |
| 15... | .16 | .40 | .03 | .10 | T | 0. | T | .40 | 0. | 0. | T | T |
| 16... | T | .14 | .02 | .39 | 0. | 0. | 0. | 0. | 0. | 0. | .96 | .04 |
| 17... | 0. | 0. | 0. | 0. | 0. | .01 | 0. | 0. | 0. | 0. | T | 0. |
| 18... | 0. | .10 | .36 | 1.25 | 0. | 0. | .13 | 0. | 0. | T | 0. | 0. |
| 19... | 0. | .09 | 0. | T | 0. | 0. | 0. | 0. | 0. | T | 0. | 0. |
| 20... | T | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .52 | 0. | .03 |
| 21... | .04 | 0. | 0. | .67 | 0. | .02 | 0. | 0. | 1.05 | T | .16 | .04 |
| 22... | .23 | .10 | 0. | 0. | 0. | .80 | T | 0. | .82 | .17 | 1.15 | T |
| 23... | 0. | .51 | 0. | 0. | 0. | .10 | 0. | 0. | 0. | .18 | 0. | 0. |
| 24... | 0. | T | .33 | .01 | T | .22 | 0. | 0. | 0. | T | .01 | .24 |
| 25... | 0. | 0. | 0. | 0. | .67 | .62 | 0. | .14 | 0. | 0. | 0. | .50 |
| 26... | 0. | 0. | .29 | .19 | .25 | 0. | .02 | 0. | 0. | 0. | 0. | .15 |
| 27... | 0. | .01 | T | .09 | .01 | .06 | T | 1.22 | 0. | 0. | 0. | .01 |
| 28... | .71 | 0. | T | .17 | 0. | 0. | .06 | T | T | 0. | .10 | .13 |
| 29... | .65 | .... | T | 2.75 | T | 0. | .54 | 0. | 0. | T | 0. | 0. |
| 30... | T | .... | T | 0. | T | 0. | 0. | 0. | 0. | 0. | 0. | T |
| 31... | T | .... | 0. | .... | .04 | .... | T | T | .... | 0. | .... | 0. |
| Total | 1.96 | 3.84 | 1.63 | 7.73 | 2.18 | 5.09 | 1.77 | 6.20 | 3.60 | 1.20 | 3.84 | 4.18 |

ANNUAL REPORT

# BUREAU OF SEWERS

CITY OF CHICAGO

1909

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WM. E. QUINN
SUPERINTENDENT

# BUREAU OF SEWERS

April 20, 1910.

HON. JOHN J. HANBERG,
Commissioner of Public Works.

DEAR SIR:

I beg to submit this, the Thirty-fourth Annual Report of the Bureau of Sewers and Fifty-fourth Annual Report of work done in connection with the sewers of the city.

EXPENDITURES.

| | | |
|---|---|---|
| Total | | $497,787.91 |
| House Drains | $ 43,822.21 | |
| Ninety-fifth Street Pumping Station | 15,818.99 | |
| Kensington Pumping Station | 9,907.54 | |
| Pullman Pumping Station | 9,979.43 | |
| Stony Island Avenue Pumping Station | 16,829.55 | |
| Hegewisch Pumping Station | 563.47 | |
| Temporary Pumping Station, 95th street | 10,510.50 | |
| Repairing Catch Basins, Sewers, etc | 66,524.07 | |
| Repairing Covers. | 29,493.14 | |
| Building New Catch Basins | 4,957.00 | |
| Cleaning Sewers, Catch Basins, etc | 231,703.31 | |
| Bench Monuments | 3,619.98 | |
| Restoration of Streets | 2,849.97 | |
| Miscellaneous Work Deposits | 2,444.20 | |
| Repairing Sewer Canal Place | 472.47 | |
| Ninety-fifth Street Station boiler, boiler house, smoke stack, etc | 22,947.34 | |
| Ninety-fifth Street Station for temporary boiler | 470.00 | |
| Ninety-fifth Street Station, housing pump No. 3 | 960.00 | |
| Unpaid bills | 9,195.03 | |
| Connecting Sewers in Armour and Dearborn Streets | 14.92 | |
| Office Expenses | 14,704.79 | |

## SEWERS AND CATCH-BASINS CLEANED (BY DISTRICTS) IN THE CITY OF CHICAGO DURING THE YEAR 1909.

| METHOD | DISTRICT NO. 1 | | DISTRICT NO. 2 | | DISTRICT NO. 3 | | DISTRICT NO. 4 | | DISTRICT NO. 5 | | TOTAL | | Average Cost Per 100 Feet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feet Cleaned | Cost | Feet Cleaned | Cost | Feet Cleaned | Cost | Feet Cleaned | Cost | Feet Cleaned | Cost | Feet Cleaned | Cost | |
| Flushing | 1,300,600 | $13,384 20 | 749,800 | $10,446.95 | 210,750 | $2,297.40 | 412,700 | $4.316 35 | 325,100 | $4,147.60 | 2,998,950 | $34,592.50 | $1.15 |
| Iron Scraper | 37,150 | 8 377.90 | 214,500 | 7,037.40 | 127,200 | 8,096.80 | 109,550 | 13,299.40 | 9,450 | 1,497.40 | 497,850 | 38,308.90 | 7.70 |
| Total | 1,337,750 | $21,762.10 | 964,300 | $17,484,35 | 337,950 | $10,394.20 | 522,250 | $17,615.75 | 334,550 | $5,645.00 | 3,496,800 | $ 72,901.40 | |
| Opening Inlets to Catch-Basins, Attending Complaints, etc. | | | | | | | | | | | | 44,091.49 | |
| Total | | | | | | | | | | | | $116,992.89 | |

| | No. | Cost | No. | Cost | No. | Cost | No. | Cost | No. | Cost | Total No. | Cost | Average Cost per Basin |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch-Basins Cleaned | 5,153 | $34,458.40 | 7,717 | $24,436.80 | 6,447 | $19.114.00 | 3,502 | $15,163.10 | 3,157 | $17,457 95 | 25,976 | $110,630.25 | $4.26 |
| Cost of Cleaning Sewers and Catch-Basins | | | | | | | | | | | | $227,623.14 | |
| Miscellaneous Bills, Tools, Supplies, etc. | | | | | | | | | | | | 4,080.17 | |
| Total | | | | | | | | | | | | $231,703.31 | |

## AMOUNTS EXPENDED FOR REPAIRS OF SEWERS, MANHOLES AND CATCH-BASINS DURING THE YEAR 1909.

| No. | DESCRIPTION OF WORK DONE | | Bbls. of Cement | No. of Brick | FEET OF LUMBER | | Wood Covers | Iron Covers | Wood Lids | Iron Lids | STRAIGHT TILE PIPE | | | | | CURVED TILE PIPE | | | | Tile Traps | Tile Junctions | Tile Slants | Wood Bottoms | Gutter Boxes | Grates | Labor and Teaming | Material | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Pine | Oak | | | | | 6-inch | 9-inch | 12-inch | 15-inch | 18-inch | 6-inch | 9-inch | 12-inch | 15-inch | | | | | | | | | |
| 11 | New manholes built | | 2,063 | 498,760 | 13,210 | 12,250 | 248 | 222 | 73 | 28 | 507 | 4,168 | 486 | 161 | 68 | 44 | 167 | 20 | 16 | 70 | 57 | 4 | 29 | 63 | 10 | $62,887.32 | $ 8,593.75 | $71,481.07 |
| 31 | New catch-basins built | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 933 | Manholes repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2273 | Catch-basins repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 296 | Feet of 6-inch sewer repaired | Tile Pipe | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3715 | Feet of 9-inch sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 694 | Feet of 12-inch sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 125 | Feet of 15-inch sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 94 | Feet of 18-inch sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 311 | Feet of 2-foot sewer repaired | Brick | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 159 | Feet of 2½-ft. sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 116 | Feet of 3-foot sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | Feet of 4-foot sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | Feet of 5-foot sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 141 | Feet of 6-foot sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Feet of 6½-ft. sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72 | Feet of 9-foot sewer repaired | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 102 | Feet of new 6-inch sewer built | Tile Pipe | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 892 | Feet of new 9-inch sewer built | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Feet of new 12-inch sewer built | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | Bench Monuments Built | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## REPAIRS OF MANHOLE AND CATCH-BASIN COVERS.

| FEET OF LUMBER | | WOOD COVERS | | IRON COVERS | | WOOD LIDS | | IRON LIDS | | Grates | Labor and Teaming | Material | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pine | Oak | Man hole | Catch-basin | Man-hole | Catch-basin | Man-hole | Catch-basin | Man-hole | Catch-basin | | | | |
| 78,233 | 79,068 | 252 | 163 | 34 | 11 | 2,330 | 922 | 507 | 239 | 157 | $23,395.78 | $ 6,097.36 | $29,493.14 |

Total ........................ $100,974.21

18,414 complaints were attended to by the Bureau during the year.

## THE FOLLOWING SHOWS THE AMOUNT EXPENDED PER MILE PER YEAR FOR THE PAST TWENTY-THREE YEARS IN CLEANING SEWERS AND CATCH BASINS.

| YEAR | Miles of Sewers to Maintain | Cost of Cleaning Sewers and Catch-Basins | Cost Per Mile of Cleaning Sewers and Catch-Basins, Per Year |
|---|---|---|---|
| 1887 | 474 | $ 50,264.65 | $106.04 |
| 1888 | 492 | 52,423.41 | 106.55 |
| 889 | 712 | 61,508.01 | 86.38 |
| 890 | 785 | 107,878.34 | 137.42 |
| 891 | 888 | 123,620.44 | 139.21 |
| 892 | 992 | 142,720.52 | 143.87 |
| 893 | 1,145 | 132,638.51 | 115.84 |
| 894 | 1,211 | 154,225.45 | 127.35 |
| 895 | 1,248 | 134,424.44 | 107.71 |
| 896 | 1,306 | 96,901.65 | 74.20 |
| 897 | 1,345 | 91,414.89 | 67.96 |
| 898 | 1,388 | 92,961.88 | 66.98 |
| 899 | 1,424 | 72,439.07 | 50.92 |
| 900 | 1,453 | 80,985.64 | 55.73 |
| 901 | 1,475 | 94,369.87 | 63.98 |
| 902 | 1,501 | 99,372.58 | 66.20 |
| 903 | 1,529 | 118,303.41 | 77.37 |
| 904 | 1,583 | 124,260.26 | 79.50 |
| 905 | 1,615 | 127,003.97 | 78.64 |
| 906 | 1,633 | 150,942.10 | 92.43 |
| 907 | 1,673 | 204,329.37 | 122.13 |
| 908 | 1,724 | 233,093.89 | 135.25 |
| 909 | 1,772 | 231,692.61 | 130.75 |

## HOUSE DRAINS

EDWARD J. HAYES, CHIEF INSPECTOR.

The following report of the House Drain Division for the year 1909 shows in detail the necessary inspections and supervision of sewer work being done by licensed drain layers, throughout the City of Chicago.

The total amount of house drain work done during the year 1909 having once more surpassed any former year during the existence of this Department.

The increase of work from year to year for this Division may best the increase in receipts during the last eight years for permits, junctions, etc., to be as follows:

| | |
|---|---|
| 1901 | $20,934.25 |
| 1903 | 21,451.60 |
| 1905 | 28,244.93 |
| 1907 | 41,751.27 |
| 1909 | 50,938.70 |

The increased receipts for the year 1909 prove the growth and present importance of this Division and make it practically self-sustaining.

## RECEIPTS OF HOUSE DRAIN DIVISION FOR THE YEAR 1909.

| DIVISIONS | HOUSE DRAINS | | | | NEW JUNCTIONS SET | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extension and Repair Permits | Drains Laid by Council Orders | Regular Fee Permits | Permit Receipts | 6-inch | Receipts | 9-inch | Receipts | 12-inch | Receipts | 15-inch | Receipts | Total Junctions | Total Junction Receipts | Total Receipts |
| North ........ .... | 825 | 169 | 1,122 | $ 5,610.00 | 211 | $ 527.50 | 51 | $ 255.00 | 4 | $ 30.00 | | $ | 266 | $ 812.50 | $ 6,422.50 |
| South ............ | 1,484 | 102 | 3,863 | 19,315.00 | 349 | 872.50 | 99 | 495.00 | 9 | 67.50 | | | 457 | 1,435.00 | 20,750.00 |
| West............. | 2,052 | 618 | 3,300 | 16,500.00 | 423 | 1,057.50 | 120 | 600.00 | 14 | 105.00 | 4 | 40.00 | 561 | 1,802.50 | 18 302.50 |
| Total | 4,361 | 889 | 8,285 | $ 41,425.00 | 983 | $ 2,457.50 | 270 | $1,350.00 | 27 | $ 202.50 | 4 | $ 40.00 | 1 284 | $4,050.00 | $ 45,475.00 |

## RECEIPTS FROM ALL SOURCES.

| | |
|---|---|
| Total receipts for regular house-drain permits | $41,425.00 |
| Total receipts for junction sewer material fund | 4,050.00 |
| Total receipts for drain layers' licenses | 2,090.00 |
| Total receipts for Council order drains and sewer inspections | 3,296.00 |
| Total receipts for miscellaneous special assessment warrants | 77.70 |
| Grand total of all receipts | $50,938.70 |

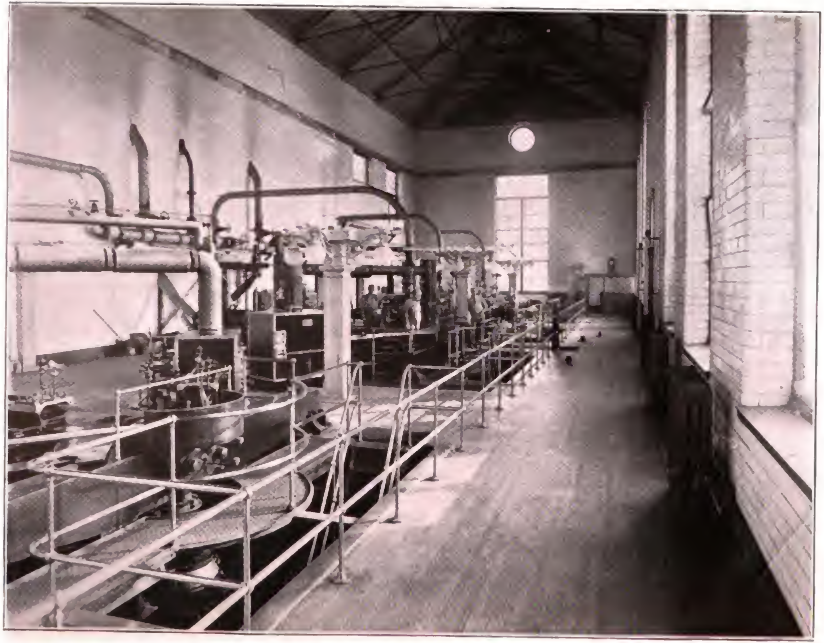
## INSPECTIONS.

| | |
|---|---|
| Total number of inspections, house-drain extensions, and repairs. | 4,361 |
| Total number of inspections, new junction connections—"fee permits" | 5,988 |
| Total number of inspections, new stub connections—"fee permits" | 2.297 |
| Total number of inspections, Council order junction connections. | 889 |
| Grand total number of inspections | 13,535 |

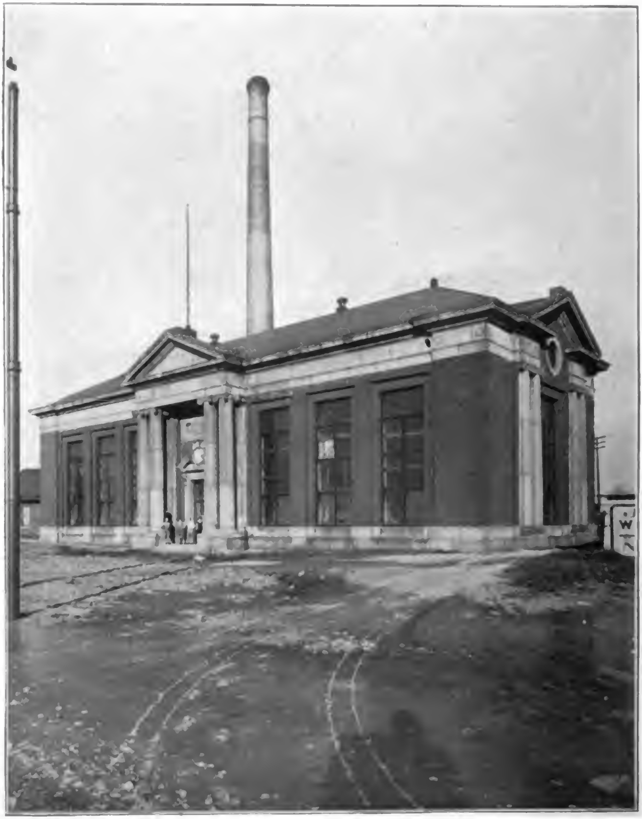
## MISCELLANEOUS HOUSE DRAINS CONSTRUCTED.

| | |
|---|---|
| Total number of house-drains, laid by permits, under supervision of Bureau of Sewers | 8,338 |
| Total number of house-drains, laid by Council order, under supervision of Bureau of Sewers | 889 |
| Total number of house-drains, extensions, and repairs, done under supervison of Bureau of Sewers | 4,361 |
| Total number of house-drains, junctions for main sewers, set under supervision of Bureau of Sewers | 1,284 |
| Total number of house-drains (stubs), laid by special assessment under supervision of Board of Local Improvements | 4,515 |
| Grand total | 19,387 |

Stony Island Avenue Pumping Station



Stony Island Avenue Pumping Station



STONY ISLAND AVENUE PUMPING STATION

## JACKSON PARK AVENUE PUMPING STATION

NAME CHANGED TO

## STONY ISLAND AVENUE PUMPING STATION.

WM. DONLAN, CHIEF ENGINEER.

At this station the twenty-four million gallon sewage pumping engine was kept in continuous operation during the year. Except on a few occasions, during heavy rain, the storm-water pumping engines were run.

On April 29th the greatest amount of water was pumped, which was 75,000,000 gallons; the least amount was pumped on November 2nd, amounting to 10,000,000 gallons.

PUMPAGE AND OPERATING EXPENSE PER MONTH DURING THE YEAR.

| Mo'th | Gallons Pumped. | Coal Consumed. | Cost of Coal. | Salaries. | Repairs. | Supplies. | Total. |
|---|---|---|---|---|---|---|---|
| Jan. | 497,000,000 | 249,000 | $ 267.68 | $ 1,033.22 | ...... | $ 43.10 | $ 1,343.91 |
| Feb. | 529,500,000 | 263,000 | 282.73 | 1,046.25 | ...... | 70.62 | 1,399.60 |
| Mar. | 518,000,000 | 259,000 | 278.43 | 1,046.25 | $ 19.53 | 69.34 | 1,413.55 |
| Apr. | 759,500,000 | 379,500 | 450.48 | 1,046.25 | ...... | 85.91 | 1,582.64 |
| May. | 536,500,000 | 241,200 | 295.47 | 1,046.25 | ...... | 54.42 | 1,396.14 |
| June | 530,500,000 | 238,500 | 292.16 | 1,046.25 | 17.45 | 46.33 | 1,402.19 |
| July. | 505,000,000 | 227,250 | 278.38 | 1,046.25 | 58.76 | 41.10 | 1,424.49 |
| Aug. | 538,000,000 | 242,100 | 296.57 | 1,046.25 | ...... | 50.52 | 1,393.34 |
| Sept. | 470,000,000 | 235,000 | 287.88 | 1,046.25 | 47.40 | 50.49 | 1,432.02 |
| Oct. | 467,000,000 | 233,500 | 286.04 | 1,046.25 | 51.07 | 50.11 | 1,433.47 |
| Nov. | 466,000,000 | 233,000 | 285.43 | 1,046.25 | 6.00 | 76.28 | 1,413.96 |
| Dec. | 556,000,000 | 278,000 | 330.55 | 1,010,41 | 97.60 | 41.97 | 1,470.53 |
| Total | 6,373,500,000 | 3,079,000 | $3,631.80 | $12,506.13 | $297.81 | $680.10 | $17,115.84 |

Average pumpage 17,467,000 gallons per 24 hours.

This station has been operated very economically during the year. Only such repairs as were absolutely necessary were made. Owing to the lack of funds the renewal of windows in engine room and other repairs recommended were not attended to.

I would especially recommend that the windows in engine room be renewed as soon as possible, as they are dangerous in their present condition. Other improvements, such as cementing and painting the pump pits to prevent the leakage of sewer gas, returning the condensation from heating system to boilers, covering steam drums, and putting doors on back ends of boilers to prevent condensation; all of which is necessary to bring about the best results and should receive attention during the ensuing year.

## PULLMAN PUMPING STATION.

DAVID S. WILLIAMS, CHIEF ENGINEER.

At this station the pumps ran from 15 to 20 hours per day. Pumping on an average of 2,000,000 gallons of water per day. During the year the total amount of sewage pumped was 766,000,000 gallons.

The following repairs and improvements have been made during the year:

The flues were expanded in No. 1 boiler; repaired brick arches and brick piers under No. 1 and No. 2 boilers. Smoke breeching repaired; blow-off and circulating pipe under No. 1 boiler, also several leaks in heating system, and some repairs made on boiler feed-pipe connections and pump.

Overhauled water ends of both pumps; put in new pins in clamshell valves; new leather cups and new rubber hoods were needed. Lined up shaft on No. 1 engine. Babbitted one box on main shaft with phosphor bronze brass metal.

OPERATING EXPENSE, 1909.

| | |
|---|---|
| Salaries for year | $ 7,063.00 |
| Cost of fuel burned | 2,046.89 |
| Cost of oils, waste and grease | 150.00 |
| Repairs to engine | 489.76 |
| Repairs to boiler | 390.92 |
| Boiler compound | 73.54 |
| Total | $10,141.11 |

This plant is in a very fair shape but there are many changes which should be made for the betterment of same, namely, take out old circulating pipes and old connections from under both boilers; change boiler feeds to come in on top of boilers. The boilers were set wrong in this plant when they were put in. The roof of this station leaks; bad gutters and down spouts need repairing.

## KENSINGTON PUMPING STATION.

THOMAS F. ROWAN, CHIEF ENGINEER.

This station has given good service during the year, pumping 743,100,000 gallons of sewage. The engines and pumps required very little repairing and they are in good condition ending the year. Some minor repairs on engines No. 1 and 2 will be necessary; the boilers are not in need of repairs.

This station takes care of the territory bounded by 99th street, 116th street, State street and the I. C. R. R., and the district is being improved so rapidly that the station is inadequate and some change in the locality of the station must be made in order to prevent the flooding of basements during a heavy storm.

The total expense of the station for the year was $9,907.54.

## NINETY-FIFTH STREET PUMPING STATION.

JOHN M. GOLDEN, CHIEF ENGINEER.

The City took charge of the pumping of sewage at this station January 1, 1909, and began pumping January 2nd. We were handicapped by the incomplete condition of the plant, there being no boilers set and the chimney not being completed. We used two portable boilers and were able to handle the water with the small engine and pump until the middle of February when we were able to start one of the larger engines.

We began using the regular boilers March 12th, having put in a temporary steam line. The engine and pumps were shortly afterwards completed and the station put in full operation.

A complete electric lighting system including a generating set is being installed and will be in operation February 1, 1910.

A gravity oiling and filtering system is also being installed and will be completed about March 1, 1910; this is being done with very little expense to the City; the regular employes furnishing all the labor, the total cost to the City being but $210.50, a saving of $369.50, as the lowest bid we could get on the installation of the system was $580.00. This improvement will result in a large saving of oil, as well as having the advantage of allowing us to keep the bearings flooded with oil at all times.

Some changes must be made to enlarge the lavatory to provide dressing rooms for the employes, the original plan of the building being at fault in not providing ample facilities. A change should also be made in taking care of condensation water. I believe it should be returned directly to the boiler from the traps instead of sending it to a tank and then pumping it.

The equipment of the station consists of two Allis-Chalmers cross compound engines, each connected to a submerged centrifugal pump, each with a rated capacity of 71,280,000 gallons per 24 hours. One Allis-Chalmers cross compound engine connected to a submerged pump with a rated capacity of 24,300,000 gallons per 24 hours.

During the year there were pumped 7,810,567,290 gallons of sewage at a cost of $15,818.99.

## HEGEWISCH PUMPING STATION.

JOHN T. DUFFY, ENGINEER IN CHARGE.

This station was put in operation on November 20, 1909, and 35,000,000 gallons of sewage were pumped and the total operating expense was $400.00.

The plant is equipped with two 40-horse power gas engines and two centrifugal pumps with a capacity of 10,000,000 gallons each per 24 hours.

I would recommend that the batteries for furnishing the spark be removed from beneath the office floor; that a shed be built for the storage of coal and oil; that the exhaust pots be removed from the attic and that a telephone be installed.

## NEW SEWERS AND CATCH BASINS BUILT DURING THE YEAR 1909, AND THE COST OF SAME.

| Length. | Diameter in Feet. | Cost. |
|---|---|---|
| * 1,539 | ¾ foot tile pipe | $ 1,997.31 |
| *117,679 | 1 foot tile pipe | 156,200.42 |
| * 65,666 | 1¼ foot tile pipe | 104,129.94 |
| * 21,221 | 1½ foot tile pipe double strength | 38,721.33 |
| * 2,693 | 1⅔ foot tile pipe double strength | 6,143.66 |
| * 1,090 | 2 foot tile pipe double strength | 2,997.50 |
| * 665 | 2 foot brick single ring | 1,662.50 |
| * 9,623 | 2 foot brick double invert | 29,479.53 |
| * 3,646 | 2 foot brick double ring | 11,651.64 |
| * 4,330 | 2½ foot brick double invert | 15,699.25 |
| * 1,259 | 2½ foot brick double ring | 5,524.35 |
| * 6,009 | 3 foot brick double ring | 29,213.31 |
| * 3,653 | 3½ foot brick double ring | 22,067.40 |
| * 4,620 | 4 foot brick double ring | 28,633.90 |
| * 4,240 | 4½ foot brick double ring | 30,079.80 |
| * 6,494 | 5 foot brick double ring | 56,587.75 |
| * 6,627 | 5½ foot brick double ring | 65,356.74 |
| * 1,702 | 5½ foot brick three ring | 25,530.00 |
| * 8,144 | 6 foot brick double ring | 70,221.40 |
| * 1,995 | 7 foot brick three ring | 19,650.95 |
| * 5,300 | 7½ foot brick three ring | 58,300.00 |
| * 2,665 | 8 foot brick three ring | 32,646.25 |
| * 2,621 | 8½ foot brick three ring | 33,417.75 |
| * 5,685 | 9 foot brick three ring | 94,185.00 |
| * 4,073 | 14 foot x 12 foot concrete conduit | 150,000.00 |
| † 2,208 | ¾ foot tile pipe | 2,426.40 |
| † 41,002 | 1 foot tile pipe | 58,509.86 |
| † 13,125 | 1¼ foot tile pipe | 19,828.30 |
| † 665 | 1½ foot tile pipe, double strength | 1,330.00 |
| † 1,568 | 2 foot brick single ring | 4,155.20 |
| † 369 | 2½ foot brick double invert | 1,199.25 |
| ‡ 102 | ½ foot tile pipe | 102.00 |
| ‡ 892 | ¾ foot tile pipe | 1,338.00 |
| ‡ 12 | 1 foot tile pipe | 30.00 |
| § 160 | 1 foot cast iron pipe | 195.00 |
| § 145 | 1 foot tile pipe | 999.00 |
| § 796 | 1¼ foot tile pipe | 868.01 |
| 354,283 | | $1,181,078.70 |

*Special Assessment.
†Private Contract.
‡Repair Gangs.
§Intercepting sewers.

## SEWERS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| Aberdeen street | W. 103rd street | W. 102nd street | 1¼ | 662 | Simon Ryan. |
| Aberdeen street | W. 102nd street | W. 100th street | 1 | 1,338 | Simon Ryan. |
| Aberdeen street | W. 100th street | W. 99th street | 1¼ | 663 | Simon Ryan. |
| Aberdeen street | W. 98th street | W. 99th street | 1 | 624 | Simon Ryan. |
| Aberdeen street | W. 77th street | W. 76th street | 1¼ | 669 | Simon Ryan. |
| S. Ada street | W. 79th street | W. 78th street | 2 d. l. | 662 | Simon Ryan. |
| S. Ada street | W. 78th street | W. 77th street | 1½ d. s. | 665 | Simon Ryan. |
| S. Ada street | W. 88th street | Alley S. of W. 87th street. | 1 | 458 | Nick Mancini. |
| W. Addison street | N. Branch Chicago River. | N. Robey street | 6 d. r. | 4,757 | Nash, Dowdle Co. |
| Albert street | 300 ft. S. of 18th street | 522 feet south | ¾ | 222 | M. H. McGovern Co. |
| Alley west of Cottage Grove avenue | 39th street | Alley south | ¾ | 142 | Jas. A. Sackley Co. |
| Alley S. of 39th street. | Alley west of Cottage Grove avenue | 200 feet west | ¾ | 216 | Jas. A. Sackley Co. |
| 2nd alley east of Indiana avenue | 135th place | 1st alley south | ¾ | 180 | Joe Molony. |
| W. Belden avenue | N. 52nd avenue | N. 51st avenue | 1¼ | 667 | American Engr. & Const. Co. |
| W. Belden avenue | N. 51st avenue | N. 50th avenue | 1 | 673 | American Engr. & Const. Co. |
| W. Belden avenue | N. 50th avenue | N. 49th avenue | 1 | 676 | American Engr. & Const. Co. |
| W. Belden avenue | N. 49th avenue | N. 48th avenue | 1¼ | 666 | American Engr. & Const. Co. |
| Bensley avenue | 107th street | 108th street | 1¼ | 658 | P. J. McNulty. |
| Bensley avenue | 108th street | 109th street | 1 | 518 | P. J. McNulty. |
| W. Berteau avenue | N. 53rd avenue | N. 51st avenue | 1 | 1,342 | Simon Ryan. |
| Bishop street | W. 88th street | Alley S. of W. 87th street. | 1 | 473 | Joe Molony. |
| Bishop street | W. 88th street | W. 89th street | 1¼ | 618 | Joe Molony. |
| Bishop street | W. 89th street | W. 90th street | 1 | 712 | Joe Molony. |
| Buffalo avenue | 134th street | 133rd street | 1¼ | 661 | Nash, Dowdle Co. |
| Buffalo avenue | 133rd street | 132nd street | 1 | 668 | Nash, Dowdle Co. |
| Buffalo avenue | 134th street | Alley N. of 136th street. | 1 | 1,163 | Nash, Dowdle Co. |
| Burnside avenue | Cottage Grove avenue. | Langley avenue | 1½ d. s. | 688 | Nick Mancini. |
| Burnside avenue | Langley avenue | Champlain avenue | 1¼ | 400 | Nick Mancini. |
| Burnside avenue | Champlain avenue | St. Lawrence avenue | 1 | 410 | Nick Mancini. |
| Calhoun avenue | 103rd street | 104th street | 1¼ | 624 | P. J. McNulty. |
| Calhoun avenue | 104th street | 105th street | 1 | 664 | P. J. McNulty. |
| Calhoun avenue | 105th street | 106th street | 1 | 666 | P. J. McNulty. |
| Calhoun avenue | 106th street | 107th street | 1¼ | 658 | P. J. McNulty. |
| Calhoun avenue | 107th street | 108th street | 1¼ | 660 | P. J. McNulty. |
| Calhoun avenue | 108th street | 109th street | 1 | 515 | P. J. McNulty. |

### SEWERS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909—Continued.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| Calumet avenue | Calumet River | 134th street | 1½ d. s. | 550 | Joe Molony. |
| Calumet avenue | 134th street | 133rd street | 1 | 665 | Joe Molony. |
| Calumet avenue | 95th street | 94th street | 1 | 687 | Michael Pontorelli. |
| Carondolet avenue | 133rd street | 132nd street | 1¼ | 672 | Nash, Dowdle Co. |
| Carondolet avenue | 132nd street | 130th street | 1 | 1,332 | Nash, Dowdle Co. |
| Carondolet avenue | 134th street | Howard avenue | 3 d. r. | 200 | Nash, Dowdle Co. |
| Carondolet avenue | 134th street | 133rd street | 1½ d. s. | 660 | Nash, Dowdle Co. |
| Calumet avenue | 117th street | C. & W. I. R. R. | 1 | 412 | Simon Ryan. |
| W. Carmen avenue | Lincoln avenue | 635 feet west | 1 | 640 | Nick Mancini. |
| S. Carpenter street | W. 77th street | W. 76th street | 1 | 645 | Simon Ryan. |
| S. Center avenue | W. 79th street | W. 78th street | 2 d. l. | 665 | Simon Ryan. |
| S. Center avenue | W. 78th street | W. 77th street | 1½ d. s. | 663 | Simon Ryan. |
| S. Center avenue | W. 77th street | W. 76th street | 1¼ | 668 | James Walsh. |
| S. Center avenue | W. 76th street | W. 75th street | 1 | 594 | James Walsh. |
| N Central P'k avenue | W. Addison street | W. Waveland avenue | 1¼ | 649 | Michael Pontorelli. |
| N. Central P'k avenue | W. Waveland avenue | W. Byron street | 1 | 1,300 | Michael Pontorelli. |
| N. Central P'k avenue | W. Byron street | Alley south of W. Irving Park boulevard | ¾ | 446 | Michael Pontorelli. |
| Champlain avenue | Burnside avenue | 1st alley N. of 95th street | 1 | 495 | Nick Mancini. |
| Charles street | W. 103rd street | 200 feet N. of W. 104th st. | 1 | 461 | Joe Molony. |
| Chauncey avenue | 91st street | 92nd street | 1 | 669 | Federal Improvement Co. |
| Chauncey avenue | 92nd street | Alley N. of 93rd street | 1 | 485 | Federal Improvement Co. |
| Coles avenue | 73rd street | 72nd street | 1¼ | 778 | P. J. McNulty. |
| Coles avenue | 72nd street | 71st street | 1 | 474 | P. J. McNulty. |
| Colfax avenue | 79th street | 78th street | 1⅔ d. s. | 665 | Simon Ryan. |
| Colfax avenue | 78th street | 77th street | 1½ d. s. | 666 | Simon Ryan. |
| Colfax avenue | 77th street | 76th street | 1¼ | 663 | Simon Ryan. |
| Colfax avenue | 76th street | 75th street | 1 | 633 | Simon Ryan. |
| Colfax avenue | Alley N. of 93rd street | Alley S. of 91st street | 1 | 965 | Federal Improvement Co. |
| Colfax avenue | South Chicago avenue | 88th street | 1¼ | 570 | Federal Improvement Co. |
| Colfax avenue | 88th street | 87th street | 1 | 636 | Federal Improvement Co. |
| Commercial avenue | 134th street | 132nd street | 2 d. r. | 1,336 | Nash, Dowdle Co. |
| Commercial avenue | 83rd street | 100 feet N. of 82nd street | 1 | 785 | Tony Fosco. |
| Commercial avenue | 99th street | 98th street | 1¼ | 674 | James Healy. |
| Commercial avenue | 98th street | 97th street | 1 | 659 | James Healy. |
| Commercial avenue | 95th street | 96th street | 1¼ | 668 | James Healy. |
| Commercial avenue | 96th street | 97th street | 1 | 672 | James Healy. |
| ***Cottage Grove avenue.** | **90th street** | **95th street** | **6** | **3,387** | **M. P. Byrne Const. Co.** |
| ***Cottage Grove avenue.** | **87th street** | **89th street** | **3** | **1,335** | **M. P. Byrne Const. Co.** |

***Concrete sewers.**

| | | | | | |
|---|---|---|---|---|---|
| Crystal avenue | **Alley E. of Central Ave** | 340 feet E. of Pine avenue | 1 | 724 | Joe Molony. |
| Dauphin avenue | 90th street | 91st street | 1¼ | 675 | Joe Molony. |
| Dauphin avenue | 91st street | 92nd street | 1 | 670 | Joe Molony. |
| Dauphin avenue | 90th street | 88th place | 2 d. l. | 1,010 | Federal Improvement Co. |
| Dauphin avenue | 88th place | 88th street | 1½ d. s. | 342 | Federal Improvement Co. |
| Dauphin avenue | 88th street | 87th street | 1¼ | 692 | Federal Improvement Co. |
| Dewitt court | Chicago avenue | Chestnut street | 4½ d. r. | 608 | American Engr. & Const. Co. |
| Dewitt court | Chestnut street | Walton place | 4 d. r. | 590 | American Engr. & Const. Co. |
| W. Division street | Willow avenue | Central avenue | 2 d. l. | 1,292 | Simon Ryan. |
| Dobson avenue | 90th street | 92nd street | 2½ d. l. | 1,331 | Michael Pontorelli. |
| Dobson avenue | 92nd street | 93rd street | 2½ d. l. | 665 | Michael Pontorelli. |
| Drexel avenue | 90th street | 91st street | 1¼ | 687 | Michael Pontorelli. |
| Drexel avenue | 91st street | 92nd street | 1 | 662 | Michael Pontorelli. |
| Drexel avenue | 92nd street | 93rd street | 1 | 670 | Michael Pontorelli. |
| Drexel avenue | 83rd street | 84th street | 1⅔ d. s. | 687 | Nick Mancini. |
| Drexel avenue | 84th street | 85th street | 1½ d. s. | 661 | Nick Mancini. |
| Drexel avenue | 85th street | 86th street | 1¼ | 663 | Nick Mancini. |
| Drexel avenue | 86th street | 87th street | 1 | 660 | Nick Mancini. |
| 87th street | Dauphin avenue | Alley E. Cottage Grove av. | 1 | 781 | Federal Improvement Co. |
| 87th place | Dauphin avenue | Alley E. Cottage Grove av. | 1 | 718 | Federal Improvement Co. |
| 87th place | Cottage Grove avenue. | Langley avenue | 1¼ | 640 | Federal Improvement Co. |
| 87th place | Langley avenue | St. Lawrence avenue | 1 | 665 | Federal Improvement Co. |
| 88th street | Dauphin avenue | Alley E. Cottage Grove av. | 1 | 661 | Federal Improvement Co. |
| 88th street | Cottage Grove avenue. | Langley avenue | 1¼ | 637 | Federal Improvement Co. |
| 88th street | Langley avenue | St. Lawrence avenue | 1 | 669 | Federal Improvement Co. |
| 88th place | Dauphin avenue | Alley E. Cottage Grove av. | 1 | 587 | Federal Improvement Co. |
| 88th place | Cottage Grove avenue. | Langley avenue | 1¼ | 641 | Federal Improvement Co. |
| 88th place | Langley avenue | St. Lawrence avenue | 1 | 664 | Federal Improvement Co. |
| •89th street | Cottage Grove avenue. | South Park avenue | 5 | 2,625 | M. P. Byrne Construction Co. |
| •89th street | South Park avenue | Indiana avenue | 4½ | 1,325 | M. P. Byrne Construction Co. |
| 89th street | Dauphin avenue | Alley E. Cottage Grove av | 1 | 530 | Federal Improvement Co. |
| 89th place | Dauphin avenue | Alley E. Cottage Grove av. | 1 | 464 | Federal Improvement Co. |
| 89th place | Cottage Grove avenue. | Langley avenue | 1¼ | 641 | Federal Improvement Co. |
| 89th place | Langley avenue | St. Lawrence avenue | 1 | 663 | Federal Improvement Co. |
| Ellis avenue | 90th street | 91st street | 1¼ | 662 | Michael Pontorelli. |
| Ellis avenue | 91st street | 92nd street | 1 | 665 | Michael Pontorelli. |
| Ellis avenue | 92nd street | 93rd street | 1 | 665 | Michael Pontorelli. |
| Erie avenue | 134th street | 133rd street | 1½ d. s. | 661 | Nash, Dowdle Co. |
| Erie avenue | 133rd street | 132nd street | 1¼ | 669 | Nash, Dowdle Co. |
| Erie avenue | 132nd street | 130th street | 1 | 1,340 | Nash, Dowdle Co. |
| Erie avenue | 134th street | Howard avenue | 1 | 831 | Nash, Dowdle Co. |
| Escanaba avenue | 95th street | 96th street | 1¼ | 649 | Fred Seip. |
| Escanaba avenue | 96th street | Alley N. of 97th street | 1 | 486 | Fred Seip. |
| Escanaba avenue | 99th street | 98th street | 1¼ | 670 | Thomas Burke. |
| Escanaba avenue | 98th street | 97th street | 1 | 655 | Thomas Burke. |

## SEWERS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909—Continued.

| STREET | FROM | TO | Diam. in feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| Essex avenue | S. Chicago avenue | 87th street | 1 | 469 | Federal Improvement Co. |
| Evans avenue | 93rd street | Lyons avenue | 1 | 451 | Michael Pontorelli. |
| Exchange avenue | 99th street | 98th street | 1¼ | 675 | Thomas Burke. |
| Exchange avenue | 98th street | 97th street | 1 | 658 | Thomas Burke. |
| Exchange avenue | 95th street | 96th street | 1¼ | 655 | Fred Seip. |
| Exchange avenue | 96th street | Alley N. of 97th st. | 1 | 480 | Fred Seip. |
| Fairbanks court | Chicago river | Ohio street | 5½ s. r. | 1,702 | American Engr. & Const. Co. |
| Fairbanks court | Ohio street | Chicago avenue | 5 d. r. | 1,527 | American Engr. & Const. Co. |
| N. 50th court | Humboldt avenue | W. Belden avenue | 1 | 672 | American Engr. & Const. Co. |
| N. 51st avenue | Grand avenue | Dickens avenue | 1¼ | 673 | American Engr. & Const. Co. |
| N. 51st avenue | Dickens avenue | Humboldt avenue | 1 | 667 | American Engr. & Const. Co. |
| N. 51st avenue | Humboldt avenue | W. Belden avenue | 1 | 669 | American Engr. & Const. Co. |
| N. 51st court | Grand avenue | Dickens avenue | 1¼ | 650 | American Engr. & Const. Co. |
| N. 51st court | Dickens avenue | Humboldt avenue | 1 | 668 | American Engr. & Const. Co. |
| N. 51st court | Humboldt avenue | W. Belden avenue | 1 | 666 | American Engr. & Const. Co. |
| N. 52nd avenue | W. Fullerton avenue | W. Belden avenue | 2 s. r. | 665 | American Engr. & Const. Co. |
| N. 52nd avenue | Grand avenue | Dickens avenue | 1½ d. s. | 621 | American Engr. & Const. Co. |
| N. 52nd avenue | Dickens avenue | Humboldt avenue | 1¼ | 664 | American Engr. & Const. Co. |
| N. 52nd avenue | Humboldt avenue | W. Belden avenue | 1 | 676 | American Engr. & Const. Co. |
| N. 53rd avenue | Grand avenue | Humboldt avenue | 1½ d. s | 1,099 | Nick Mancini. |
| N. 53rd avenue | Humboldt avenue | Belden avenue | 1¼ | 667 | Nick Mancini. |
| N. 53rd avenue | Belden avenue | Alley S. of Fullerton av. | 1 | 494 | Nick Mancini. |
| W. 56th street | 112 ft. W. Normal av | 402 ft. E. of Normal av. | 1 | 586 | Inter Ocean Pav'g & Const. Co. |
| 59th street | Stony Island avenue | Illinois Central R. R. | 1 | 434 | Thomas Burke. |
| N. 43rd avenue | Milwaukee avenue | W. Cornelia avenue | 1¼ | 472 | Joe Molony. |
| N. 43rd avenue | W. Cornelia avenue | W. Roscoe street | 1 | 670 | Joe Molony. |
| N. 45th avenue | W. Addison street | W. Cornelia avenue | 1¼ | 619 | Joe Molony. |
| N. 45th avenue | W. Cornelia avenue | W. Roscoe street | 1 | 674 | Joe Molony. |
| N. 45th court | W. Addison street | W. Cornelia avenue | 1¼ | 650 | Joe Molony. |
| N. 45th court | W. Cornelia avenue | W. Roscoe street | 1 | 673 | Joe Molony. |
| N. 46th avenue | W. Addison street | W. Cornelia avenue | 1¼ | 628 | Joe Molony. |
| N. 46th avenue | W. Cornelia avenue | W. Roscoe street | 1 | 675 | Joe Molony. |
| N. 48th court | Humboldt avenue | W. Belden avenue | 1 | 671 | Simon Ryan. |
| W. Fullerton avenue | N. 48th avenue | N. 52nd avenue | 4 d. r | 2,684 | American Engr. & Const. Co. |
| Granville avenue | W. Ravenswood Park. | N. Lincoln street | 2½ d. r. | 496 | P. J. McNulty. |
| Granville avenue | Wing | Sewer | 1¼ | 37 | P. J. McNulty. |
| Green Bay avenue | 83rd street | 84th street | 1½ d. s. | 663 | Acme Construction Co. |
| Green Bay avenue | 84th street | 85th street | 1¼ | 665 | Acme Construction Co. |
| Green Bay avenue | 85th street | 86th street | 1 | 657 | Acme Construction Co. |

| | | | | | |
|---|---|---|---|---|---|
| Greenwood avenue ... | 90th street .......... | 91st street ............ | 1¼ | 666 | Michael Pontorelli. |
| Greenwood avenue ... | 91st street .......... | 92nd street ............ | 1 | 665 | Michael Pontorelli. |
| Greenwood avenue ... | 92nd street .......... | 94th street ............ | 1 | 1,336 | Michael Pontorelli. |
| N. Hamlin avenue.... | W. Fullerton avenue.. | Belden avenue .......... | 1¼ | 665 | Nick Mancini. |
| N. Hamlin avenue.... | Belden avenue ....... | Dickens avenue ......... | 1 | 1,346 | Nick Mancini. |
| N. Hamlin avenue.... | Wing ................ | Sewer .................. | 1 | 34 | Nick Mancini. |
| N. Harding avenue... | W. Fullerton avenue.. | W. Dunning street....... | 1¼ | 668 | Thomas Burke. |
| N. Harding avenue... | W. Dunning street .. | Alley S of W. Wrightwood avenue ............... | 1 | 484 | Thomas Burke. |
| N. Harding avenue... | W. Montrose avenue... | W. Sunnyside avenue .... | 1¼ | 671 | Tony Ross. |
| S. Hermitage avenue. | 38th street .......... | 1st alley N. of 39th street | 1 | 489 | Nick Mancini. |
| Houston avenue ..... | 134th street ......... | 133rd street ............ | 1½ d. s. | 661 | Nash, Dowdie Co. |
| Houston avenue ..... | 133rd street ......... | 132nd street ............ | 1¼ | 669 | Nash, Dowdie Co. |
| Houston avenue ..... | 132nd street ......... | 130th street ............ | 1 | 1,337 | Nash, Dowdie Co. |
| Houston avenue ..... | 134th street ......... | Howard avenue.......... | 1 | 478 | Nash, Dowdie Co. |
| Howard avenue...... | Carondolet avenue.... | 850 ft. S. E. of 136th st. | 3 d. r | 2,432 | Nash, Dowdie Co. |
| Howard avenue...... | W. Madison street.... | 1st alley S. of Washington boulevard ......... | 1 | 508 | Michael Pontorelli. |
| Hoxie avenue ....... | 107th street ......... | 108th street ............ | 1¼ | 669 | P. J. McNulty. |
| Hoxie avenue ....... | 108th street ......... | 109th street ............ | 1 | 514 | P. J. McNulty. |
| S. Hoyne avenue.... | W. 63rd street ...... | W. 67th street .......... | 1 | 2,654 | Nick Mancini. |
| Humboldt avenue ... | N. 48th avenue ....... | N. 48th court ......... | 1¼ | 330 | Simon Ryan. |
| Humboldt avenue ... | N. 48th court ........ | 120 ft West ............ | 1 | 168 | Simon Ryan. |
| Humboldt avenue ... | N. 69th avenue ...... | N. 70th avenue .......... | 1¼ | 503 | Nick Mancini. |
| Ingleside avenue .... | 83rd street .......... | 84th street ............ | 1¾ d. s. | 674 | Nick Mancini. |
| Ingleside avenue .... | 84th street .......... | 85th street ............ | 1½ d. s. | 670 | Nick Mancini. |
| Indiana avenue ...... | Calumet river ....... | 136th place ............ | 2 d. s. pipe | 1,090 | Joe Molony. |
| Indiana avenue ...... | 136th place .......... | Leyden avenue .......... | 1¼ | 135 | Joe Molony. |
| Indiana avenue ...... | 134th street ......... | 340 feet South .......... | 1 | 370 | Joe Molony. |
| Indiana avenue ...... | 134th street ......... | 133rd street ............ | 1 | 665 | Joe Molony. |
| Indianapolis avenue.. | Avenue "G".......... | 103rd street ............ | 1 | 543 | Fred Seip. |
| Jackson avenue ..... | 67th street .......... | 66th street ............ | 1¼ | 665 | E. D. German. |
| Jackson avenue ..... | 66th street .......... | 65th street ............ | 1 | 666 | E. D. German. |
| Jefferson avenue .... | 83rd street .......... | 82nd street ............ | 1¼ | 664 | P. J. McNulty. |
| Jefferson avenue .... | 82nd street .......... | 81st street ............ | 1 | 667 | P. J. McNulty. |
| Kamerling avenue ... | Alley E. of Central av. | 340 ft. E. of Pine avenue. | 1 | 719 | Joe Molony. |
| S. Kedzie avenue..... | Sanitary Dist. Canal. | 180 ft. S. of W. 35th st. | 9 3. r. | 645 | T. L. Ryan & Co. |
| S. Kedzie avenue..... | 300 ft S. of W. 35th st | W. 43rd street ......... | 9 3. r. | 5,040 | T. L. Ryan & Co. |
| S. Kedzie avenue..... | W. 43rd street ...... | W. 47th street ......... | 8½ 3. r. | 2,621 | T. L. Ryan & Co. |
| S. Kedzie avenue..... | W. 47th street ...... | W. 51st street ......... | 8 3. r. | 2,665 | T. L. Ryan & Co. |
| S. Kedzie avenue..... | W. 51st street ...... | W. 59th street ......... | 7½ 3. r. | 5,300 | T. L. Ryan & Co. |
| S. Kedzie avenue..... | W. 59th street ...... | W. 62nd street ......... | 7 3. r. | 1,995 | T. L. Ryan & Co. |
| Kenwood avenue ..... | 49th street .......... | 48th street ............ | 1¼ | 668 | Thomas Burke. |
| Kimbark avenue...... | 93rd street .......... | 94th street ............ | 1 | 665 | Federal Improvement Co. |
| Kingston avenue .... | S. Chicago avenue.... | 87th street ............ | 1 | 791 | Federal Improvement Co. |

SEWERS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909—Continued.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| Langley avenue ..... | Burnside avenue ..... | 1st alley N. of 95th st... | 1 | 278 | Nick Mancini. |
| N. Lawndale avenue... | W. Cornelia avenue... | W. School street ........ | 1 | 1,336 | James Flaherty. |
| N. Leavitt street..... | Oakdale avenue ...... | 30 ft. S. of Wellington st | 1 | 263 | Carmine Roberts. |
| Lexington avenue.... | 90th street .......... | 91st street ............. | 1¼ | 666 | Federal Improvement Co. |
| Lexington avenue.... | 91st street .......... | 92nd street ............. | 1 | 665 | Federal Improvement Co. |
| Lexington avenue.... | 92nd street .......... | 94th street ............. | 1 | 1.336 | Federal Improvement Co. |
| Leyden avenue ...... | Indiana avenue....... | 138th street ............ | 1¼ | 1,080 | Joe Molony. |
| N. Lincoln street..... | Granville avenue ..... | Norwood avenue ........ | 1¼ | 858 | P. J. McNulty. |
| N. Lincoln street..... | Norwood avenue ..... | Peterson avenue ........ | 1 | 463 | P. J. McNulty. |
| S. Lincoln street ..... | W. 69th street ...... | W. 70th street .......... | 1 | 668 | James Walsh. |
| Lowe avenue.......... | W. 90th street ...... | W. 89th street .......... | 2 d. l. | 643 | Simon Ryan. |
| Lowe avenue.......... | W. 89th street ...... | W. 88th street .......... | 1½ d. s. | 640 | Simon Ryan. |
| Luella avenue ....... | 73rd street .......... | 74th street ............. | 1½ d. s. | 659 | E. D. German. |
| Luella avenue ....... | 74th street .......... | 75th street ............. | 1¼ | 669 | E. D. German. |
| Luella avenue ....... | 75th street .......... | 76th street ............. | 1 | 665 | E. D. German. |
| Lyndale avenue ...... | Kimball avenue ..... | 10 ft. E. of Ballou street. | 1 | 395 | Simon Ryan. |
| Lyons avenue ....... | Cottage Grove avenue. | Evans avenue .......... | 1¼ | 335 | Michael Pontorelli. |
| Lyons avenue ....... | Evans avenue ....... | 93rd street ............. | 1 | 804 | Michael Pontorelli. |
| N. side W. Madison st. | Franklin avenue ..... | Howard avenue ......... | 1¼ | 403 | Michael Pontorelli. |
| Magnolia avenue ..... | Petersen avenue ...... | 40 ft. N. of Thorndale av. | 1 | 232 | Simon Ryan. |
| Manistee avenue .... | 95th street .......... | 96th street ............. | 1¼ | 648 | Fred Seip. |
| Manistee avenue .... | 96th street .......... | Alley N. of 97th street.. | 1 | 489 | Fred Seip. |
| Marquette avenue.... | 83rd street .......... | 84th street ............. | 1⅔ d. s. | 667 | Thomas Burke. |
| Marquette avenue.... | 84th street .......... | 85th street ............. | 1½ d. s. | 660 | Thomas Burke. |
| Marquette avenue.... | 85th street .......... | 86th street ............. | 1¼ | 664 | Thomas Burke. |
| Marquette avenue.... | 86th street .......... | 87th street ............. | 1 | 668 | Thomas Burke. |
| Marquette avenue.... | 89th street .......... | 88th street ............. | 1¼ | 665 | P. J. McNulty. |
| Marquette avenue.... | 88th street .......... | 87th street ............. | 1 | 638 | P. J. McNulty. |
| S. May street ........ | W. 79th street ....... | W. 78th street .......... | 2 d. l. | 662 | Nick Mancini |
| S. May street ........ | W. 78th street ....... | W. 77th street .......... | 1½ d. s. | 664 | Nick Mancini |
| S. May street ........ | W. 77th street ....... | W. 76th street .......... | 1¼ | 662 | Simon Ryan. |
| S. May street ........ | W. 76th street ....... | W. 75th street .......... | 1 | 600 | Simon Ryan. |
| Medill avenue ....... | N. 52nd avenue ...... | N. 51st avenue ......... | 1¼ | 668 | Am. Engr. & Const. Co. |
| Medill avenue ....... | N. 51st avenue ...... | N. 50th avenue ......... | 1 | 688 | Am. Engr. & Const. Co. |
| Montrose avenue .... | N. Western avenue.... | N. Robey street ........ | 5½ d. r. | 2,707 | J. H. McCarthy. |
| S. Morgan street .... | W. 77th street ....... | W. 76th street .......... | 1 | 669 | Simon Ryan. |
| Muskegon avenue .... | 89th street .......... | 88th street ............. | 1¼ | 663 | P. J. McNulty. |
| Muskegon avenue .... | 88th street .......... | 87th street ............. | 1 | 634 | P. J. McNulty. |
| Muskegon avenue .... | 95th street .......... | 96th street ............. | 1¼ | 646 | Fred Seip. |

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|---|---|---|---|---|---|
| **Muskegon avenue** | 96th street | Alley N. of 97th street | 1 | 486 | Fred Seip. |
| **W. 90th street** | Wallace street | Lowe avenue | 2½ d. i. | 339 | Simon Ryan. |
| **W. 90th street** | Lowe avenue | Union Avenue | 2 d. i. | 328 | Simon Ryan. |
| **W. 90th street** | Wallace street | Butler street | 2 d. i. | 664 | Simon Ryan. |
| **W. 90th street** | Union avenue | Emerald avenue | 1½ d. s. | 333 | Simon Ryan. |
| **W. 90th street** | Butler street | Eggleston avenue | 1½ d. s. | 331 | Simon Ryan. |
| **90th street** | Cottage Grove avenue | Langley avenue | 1¼ | 645 | Federal Imp. Co. |
| **90th street** | Langley avenue | St. Lawrence avenue | 1 | 665 | Federal Imp. Co. |
| **W. 90th place** | S. Paulina street | C. R. I. & P. R. R. | 1 | 419 | Joe Molony. |
| **W. 90th place** | Cottage Grove avenue | Langley avenue | 1¼ | 640 | Joe Molony. |
| **W. 90th place** | Langley avenue | St. Lawrence avenue | 1 | 666 | Joe Molony. |
| **W. 90th place** | Dauphin avenue | 1st alley E. of Cottage Grove avenue | 1 | 339 | Joe Molony. |
| **91st street** | Dauphin avenue | 1st alley E. of Cottage Grove avenue | 1 | 275 | Joe Molony. |
| **91st street** | Cottage Grove avenue | Langley avenue | 1¼ | 641 | Joe Molony. |
| **91st street** | Langley avenue | St. Lawrence avenue | 1 | 661 | Joe Molony. |
| **91st place** | Cottage Grove avenue | Langley avenue | 1¼ | 641 | Joe Molony. |
| **91st place** | Langley avenue | St. Lawrence avenue | 1 | 664 | Joe Molony. |
| **92nd street** | Cottage Grove avenue | Langley avenue | 1½ d. s. | 640 | Joe Molony. |
| **92nd street** | Langley avenue | St. Lawrence avenue | 1¼ | 660 | Joe Molony. |
| **92nd street** | St. Lawrence avenue | C. & W. I. R. R. | 1 | 926 | Joe Molony. |
| **92nd street** | Woodlawn avenue | Chauncey avenue | 1½ d. s. | 332 | Federal Imp. Co. |
| **92nd street** | Anthony avenue | Saginaw avenue | 1½ d. s. | 351 | Federal Imp. Co. |
| **92nd street** | Saginaw avenue | Colfax avenue | 1¼ | 378 | Federal Imp. Co. |
| **92nd street** | Drexel avenue | E. right of way, I. C. R. R. | 1 | 283 | Michael Pontorelli. |
| **92nd place** | Cottage Grove avenue | Langley avenue | 1½ d. s. | 641 | Michael Pontorelli. |
| **92nd place** | Langley avenue | St. Lawrence avenue | 1¼ | 656 | Michael Pontorelli. |
| **92nd place** | St. Lawrence avenue | C. & W. I. R. R. | 1 | 472 | Michael Pontorelli. |
| **92nd place** | Drexel avenue | E. right of way, I. C. R. R. | 1 | 335 | Michael Pontorelli. |
| **93rd street** | 75 ft. E. of Greenw'd av | Lexington avenue | 1 | 220 | Federal Imp. Co. |
| **93rd street** | Lexington avenue | Woodlawn avenue | 1¼ | 334 | Federal Imp. Co. |
| **93rd street** | Woodlawn avenue | Chauncey avenue | 1½ d. s. | 330 | Federal Imp. Co. |
| **93rd street** | Chauncey avenue | Kimbark avenue | 1¼ | 330 | Federal Imp. Co. |
| **93rd street** | Kimbark avenue | W. right of way N. Y. C. & St. L. R. R. | 1 | 360 | Federal Imp. Co. |
| **93rd street** | Cottage Grove avenue | Langley avenue | 1¼ | 642 | Michael Pontorelli. |
| **93rd street** | Langley avenue | St. Lawrence avenue | 1 | 665 | Michael Pontorelli. |
| **93rd street** | Drexel avenue | Greenwood avenue | 1¼ | 1000 | Michael Pontorelli. |
| **93rd street** | Greenwood avenue | 75 ft. East | 1 | 110 | Michael Pontorelli. |
| ***95th street** | Cottage Grove avenue | Indiana avenue | 5½ | 3920 | M. P. Byrne Const. Co. |
| ***95th street** | Indiana avenue | La Salle street | 5 | 2342 | M. P. Byrne Const. Co. |
| ***95th street** | La Salle street | Stewart avenue | 4½ | 1641 | M. P. Byrne Const. Co. |
| ***95th street** | Stewart avenue | Wallace street | 4 | 1346 | M. P. Byrne Const. Co. |

*Concrete sewers.

## SEWERS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909—Continued.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| 95th street | Commercial avenue | Escanaba avenue | 2½ d. r. | 763 | Fred Seip. |
| 95th street | Escanaba avenue | Manistee avenue | 2 d. r. | 761 | Fred Seip. |
| 96th street | Alley E. of Exch'ge av. | Marquette avenue | 1 | 1540 | Fred Seip. |
| 97th street | Muskegon avenue | Escanaba avenue | 1 | 343 | Thomas Burke. |
| W. 97th street | Logan avenue | S. Carpenter street | 1 | 405 | Michael Pontorelli. |
| 97th street | Escanaba avenue | Alley E. of Exchange av. | 1 | 527 | Thomas Burke. |
| 98th street | Escanaba avenue | Alley E. of Exchange av. | 1 | 527 | Thomas Burke. |
| 98th street | Muskegon avenue | Escanaba avenue | 1 | 343 | Thomas Burke. |
| Normal avenue | W. 56th street | 147 ft. North | 1 | 181 | Inter Ocean Paving & Const. Co. |
| Oakdale avenue | N. Oakley avenue | N. Leavitt street | 1 | 664 | Carmine Roberts. |
| N. Oakley avenue | N. Br'ch Chicago River | Nelson street | 1¼ | 885 | Carmine Roberts. |
| Oglesby avenue | 83rd street | 84th street | 1½ d. s. | 669 | Howes Bros. Co. |
| Oglesby avenue | 84th street | 85th street | 1¼ | 662 | Howes Bros. Co. |
| Oglesby avenue | 85th street | Alley N. of S. Chicago av. | 1 | 687 | Howes Bros. Co. |
| W. 103rd place | Park avenue | Butler street | 1¼ | 649 | Federal Imp. Co. |
| W. 103rd place | Butler street | Alley E. of Wallace street. | 1 | 476 | Federal Imp. Co. |
| 105th street | Wabash avenue | Michigan avenue | 1 | 428 | P. J. McNulty. |
| W. 105th street | Prospect avenue | S. Wood street | 1 | 1391 | Michael Pontorelli. |
| 106th street | Calhoun avenue | Alley E. of Hoxie avenue. | 1 | 453 | Fred Seip. |
| 107th street | Hoxie avenue | Torrence avenue | 1½ d. s. | 329 | P. J. McNulty. |
| 108th street | Michigan avenue | 125 ft. E. of State street. | 1 | 489 | James Walsh. |
| 109th street | Calhoun avenue | Alley E. of Hoxie avenue. | 1 | 458 | P. J. McNulty. |
| 109th street | Calhoun avenue | Bensley avenue | 1 | 303 | P. J. McNulty. |
| 134th street | 30 ft. W. of W. line N. Y. C. & St. L. R. R. | Carondolet avenue | 4½ d. r. | 666 | Nash, Dowdle Co. |
| 134th street | Carondolet avenue | Buffalo avenue | 3½ d. r. | 1657 | Nash, Dowdle Co. |
| 134th street | Buffalo avenue | Green Bay avenue | 3 d. r. | 653 | Nash, Dowdle Co. |
| 134th street | Calumet avenue South | Calumet avenue, North | 1¼ | 140 | Joe Molony. |
| 134th street | Calumet avenue North | South Park avenue | 1 | 412 | Joe Molony. |
| 134th street | Calumet avenue South | Indiana avenue | 1¼ | 703 | Joe Molony. |
| 135th place | Indiana avenue | 2nd Alley East | 1 | 630 | Joe Molony. |
| 136th street | Indiana avenue | 2nd Alley East | 1¼ | 630 | Joe Molony. |
| 136th street | 2nd Alley East | C. & W. I. R. R. | 1 | 610 | Joe Molony. |
| 136th street | Howard avenue | Buffalo avenue | 2 d. r. | 581 | Nash, Dowdle Co. |
| 136th place | Indiana avenue | 600 ft. East | 1½ d. s | 620 | Joe Molony. |
| 136th place | 600 ft. East | 1040 ft. East | 1 | 450 | Joe Molony. |
| 138th street | Leyden avenue | C. & W. I. R. R. | 1 | 530 | Joe Molony. |
| Ontario avenue | 134th street | 133rd street | 1½ d. s. | 664 | Nash, Dowdle Co. |
| Ontario avenue | 133rd street | 132nd street | 1¼ | 664 | Nash, Dowdle Co. |
| Ontario avenue | 132nd street | 131st street | 1 | 668 | Nash, Dowdle Co. |

| | | | | | |
|---|---|---|---|---|---|
| **Ontario avenue** | **134th street** | **Howard avenue** | **1** | **1173** | **Nash, Dowdle Co.** |
| **Palmer avenue** | **73rd street** | **74th street** | **1½ d. s.** | **660** | **Federal Imp. Co.** |
| **Palmer avenue** | **74th street** | **75th street** | **1¼** | **670** | **Federal Imp. Co.** |
| **Park avenue** | **W. 103rd street** | W. 103rd place | **2 d. t.** | **350** | **Federal Imp. Co.** |
| S. Paulina street | W. 89th street | W. 90th place | **1¼** | **1013** | **Joe Molony.** |
| Potomac avenue | Alley E. of Central av. | 340 ft. E. of Pine avenue. | **1** | **721** | **Joe Molony.** |
| Pine avenue | W. Division street | Potomac avenue | **1½ d. s** | **671** | **Joe Molony.** |
| Pine avenue | Potomac avenue | Kamerling avenue | **1¼** | **339** | **Joe Molony.** |
| Prairie avenue | 134th street | 133rd street | **1** | **665** | **Joe Molony.** |
| Saginaw avenue | 89th street | 88th street | **1¼** | **665** | **P. J. McNulty.** |
| Saginaw avenue | 88th street | 87th street | **1** | **635** | **P. J. McNulty.** |
| Saginaw avenue | 92nd street | Alley N. of 93rd street | **1** | **486** | **Federal Imp. Co.** |
| St. Lawrence avenue | 93rd street | 1st Alley North | **1** | **154** | **Michael Pontorelli.** |
| St. Lawrence avenue | 95th street | 80 ft. S. of right of way of C. R. I. & P. R. R. | 1 | 1075 | Nick Mancini. |
| S. Seeley avenue | W. 63rd street | W. 67th street | 1 | 2652 | Nick Mancini. |
| N. 70th avenue | Humboldt avenue | Dickens avenue | 1 | 669 | Nick Mancini. |
| 76th street | Marquette avenue | 175 ft. West | ¾ | 180 | Simon Ryan. |
| 76th street | Colfax avenue | 167 ft. East | 1 | 201 | Simon Ryan. |
| 77th street | Colfax avenue | 167 ft. East | 1 | 201 | Simon Ryan. |
| 77th street | 140 ft. W. of Marquette avenue | Railroad avenue | 1 | 670 | Federal Imp. Co. |
| W. 65th street | S. Robey street | S. Hoyne avenue | 2 d. t. | 682 | Nick Mancini. |
| N. 69th avenue | W. Fullerton avenue | Humboldt avenue | 1½ d. s. | 1330 | Nick Mancini. |
| N. 69th avenue | Humboldt avenue | 200 ft. South | 1 | 237 | Nick Mancini. |
| So. Chicago avenue | Saginaw avenue | Kingston avenue | 2 d. r | 968 | Federal Imp. Co. |
| So. Chicago avenue | Kingston avenue | 87th street | 1¼ | 1123 | Federal Imp. Co. |
| N. Springfield avenue | Armitage avenue | Cortland street | 1¼ | 663 | Thomas Burke. |
| N. Springfield avenue | Cortland street | Bloomingdale avenue | 1 | 561 | Thomas Burke. |
| N. Springfield avenue | W. George street | 300 ft. North | 1 | 315 | Simon Ryan. |
| Stewart avenue | W. 113th street | W. 112th street | 1 | 664 | Simon Ryan. |
| Superior avenue | 134th street | 133rd street | 1¼ | 660 | Nash, Dowdle Co. |
| Superior avenue | 133rd street | 132nd street | 1 | 670 | Nash, Dowdle Co. |
| Superior avenue | 134th street | 136th street | 1 | 1298 | Nash, Dowdle Co. |
| N. Side of W. 38th st. | S. Winchester avenue. | 10 ft. E. of 1st Alley E. of S. Robey street | ¾ | 153 | Michael Pontorelli. |
| Torrence avenue | 103rd street | 104th street | 1¼ | 647 | P. J. McNulty. |
| Torrence avenue | 104th street | 105th street | 1 | 665 | P. J. McNulty. |
| Torrence avenue | 105th street | 106th street | 1 | 661 | P. J. McNulty. |
| Torrence avenue | 106th street | 107th street | 1¼ | 658 | P. J. McNulty. |

## SEWERS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909—Continued.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| Torrence avenue ..... | 107th street .......... | 108th street ............ | 1¼ | 663 | P. J. McNulty. |
| Torrence avenue ..... | 108th street .......... | 235 ft. S. of 109th street. | 1 | 788 | P. J. McNulty. |
| Tripp avenue ........ | W. Greenwood terrace. | Alley S. of W. Wrightwood avenue .......... | 1 | 483 | Michael Pontorelli. |
| Vaughn avenue ...... | 93rd street .......... | 94th street .............. | 1 | 675 | Federal Imp. Co. |
| Vincennes avenue ... | 92nd street .......... | C. & W. I. R. R.......... | 1 | 186 | Joe Molony. |
| Wabash avenue ..... | 631 ft. N. of 107th st.. | 105th street ............ | 1 | 651 | P. J. McNulty. |
| Walden Parkway .... | W. 103rd street....... | W. 105th street.......... | 1¼ | 1353 | Dominick Fosco. |
| *Wallace street ....... | 95th street .......... | 92nd street ............. | 3½ | 1996 | M. P. Byrne Const. Co. |
| *Wallace street ....... | 92nd street .......... | 90th street ............. | 3 | 1389 | M. P. Byrne Const. Co. |
| Washington avenue .. | 83rd street .......... | 82nd street ............. | 1¼ | 665 | P. J. McNulty. |
| Washington avenue .. | 82nd street .......... | 81st street ............. | 1 | 669 | P. J. McNulty. |
| Washington avenue .. | 90th street .......... | 91st street ............. | 1½ d. s. | 667 | Simon Ryan. |
| Washington avenue .. | 91st street .......... | 92nd street ............. | 1¼ | 657 | Simon Ryan. |
| Washington avenue .. | 92nd street .......... | 75 ft. N. of 93rd street... | 1 | 568 | Simon Ryan. |
| S. Western avenue.... | Sanitary Dist. Canal.. | Archer avenue .......... | 14x12 | 4073 | John W. Farley. |
| N. Western avenue... | Roscoe street ......... | Grace street ............ | 2 d. i. | 2665 | Nash, Dowdle Co. |
| N. Western avenue... | Grace street ......... | Byron street ............ | 1¼ | 673 | Nash, Dowdle Co. |
| W. Wilson avenue.... | N. 44th court......... | 20 ft. E. of N. 45th avenue. | 1 | 330 | Nick Mancini. |
| S. Winchester avenue. | W. 99th street........ | 227 ft. North............ | 1½ d. s. | 260 | Simon Ryan. |
| S. Winchester avenue. | 227 ft. North......... | 250 ft. S. of 97th street.. | 1¼ | 788 | Simon Ryan. |
| S. Winchester avenue. | 250 ft. S. of 97th street. | 250 ft. S. of 96th street.. | 1 | 676 | Simon Ryan. |
| Winnebago avenue ... | N. Western avenue.... | Bloomingdale avenue .... | 1 | 814 | Joe Molony. |
| Woodlawn avenue ... | 90th street .......... | 92nd street ............. | 2½ d. i. | 1330 | Federal Imp. Co. |
| Woodlawn avenue ... | 92nd street .......... | 93rd street ............. | 2½ d. i. | 665 | Federal Imp. Co. |
| Woodlawn avenue ... | 93rd street .......... | 94th street ............. | 1 | 671 | Federal Imp. Co. |
| | | | | 293239 | |

*Concrete Sewers.

## SEWERS CONSTRUCTED BY PRIVATE CONTRACT DURING THE YEAR 1909.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| 1st Alley E. of S. 52nd avenue | Lexington street | 110 feet south | ¾ | 142 | Joe Savalano. |
| 1st Alley E. of S. 48th avenue | Harrison street | Van Buren street | ¾ | 574 | Jas. H. Roche. |
| Alley S. of Garfield boulevard | S. Robey street | S. Lincoln street | 1½ d. s. | 665 | Wm. F. Healy. |
| Alley S. of 75th street | Washington avenue | 80 feet east | ¾ | 114 | J. C. Ladd. |
| 1st Alley W. of Shields avenue | 43rd street | 43rd place | 1 | 339 | Jas. H. Roche. |
| Argyle street | Alley W. of Christiana avenue | Bernard street | 1¼ | 552 | Wm. F. Healy. |
| N. Avers avenue | Milwaukee avenue | Wellington street | 1 | 914 | Edward Connor. |
| N. Bernard street | N. Branch Chicago Riv. | Alley N. of Lawrence Ave. | 1 | 1,012 | Wm. F. Healy. |
| N. Bernard street | Lawrence avenue | Leland avenue | 1¼ | 668 | Wm. F. Healy. |
| California avenue | Manor avenue | Alley N. of Montrose Ave. | 1 | 722 | Wm. F. Healy. |
| N. California avenue | Roscoe street | 160 ft. N. of Melrose St. | ¾ | 742 | F. M. Walters. |
| Central Park avenue | Lawrence avenue | 300 feet south | 1¼ | 342 | Wm. F. Healy. |
| N. Christiana avenue | N. Branch Chicago Riv. | Alley N. of Lawrence Ave. | 1 | 1,353 | Wm. F. Healy. |
| Claremont avenue | Byron street | Grace street | 1 | 683 | Wm. F. Healy. |
| Commonwealth avenue | Fullerton avenue | Belden avenue | 1 | 615 | Rennacker Construction Co. |
| W. Congress street | S. 47th avenue | S. 48th avenue | 1 | 632 | Jas. H. Roche. |
| Cornelia street | Oakley avenue | Alley E. of Western Ave. | 1 | 488 | Wm. F. Healy. |
| Cortez street | Leavitt street | Oakley avenue | 1 | 632 | Wm. F. Healy. |
| Cortez street | Oakley avenue | Alley E. of Western Ave. | 1 | 487 | Wm. F. Healy. |
| N. Drake avenue | Grace street | Waveland avenue | 1 | 674 | Wm. F. Healy. |
| N. Drake avenue | Waveland avenue | Addison street | 1¼ | 661 | Wm. F. Healy. |
| N. Drake avenue | Lawrence avenue | 300 feet south | 1¼ | 337 | Wm. F. Healy. |
| Eastwood avenue | Manor avenue | Francisco avenue | 1¼ | 147 | Wm. F. Healy. |
| Eastwood avenue | Francisco avenue | Sacramento avenue | 1 | 622 | Wm. F. Healy. |
| N. Eberly avenue | Addison street | Waveland avenue | 1¼ | 663 | Wm. F. Healy. |
| N. Eberly avenue | Waveland avenue | Grace street | 1 | 665 | Wm. F. Healy. |
| N. Eberly avenue | N. Branch Chicago Riv. | Ainslie street | 1 | 605 | Wm. F. Healy. |
| N. Eberly avenue | Lawrence avenue | Ainslie street | 1 | 668 | Wm. F. Healy. |
| N. Eberly avenue | Lawrence avenue | Leland avenue | 1¼ | 657 | Wm. F. Healy. |
| N. Eberly avenue | Leland avenue | Wilson avenue | 1 | 667 | Wm. F. Healy. |
| W. Eddy street | N. 40th avenue | N. 41st court | 1 | 989 | Simon Ryan. |
| Edgewater place | Hermitage avenue | E. Ravenswood Park | 1 | 409 | J. H. McCarthy & Co. |
| Euclid avenue | 73rd street | 74th street | 1 | 653 | Jas. H. Roche. |
| N. 50th avenue | Augusta street | 133 feet north | 1 | 170 | P. J. McNulty. |

## SEWERS CONSTRUCTED BY PRIVATE CONTRACT DURING THE YEAR 1909—Continued.

| STREET | FROM | TO | Diameter in Feet | Length | NAME OF CONTRACTOR |
|---|---|---|---|---|---|
| N. 50th avenue | Lawrence avenue | Avondale avenue | 1 | 854 | Wm. F. Healy. |
| N. 50th court | Lawrence avenue | Avondale avenue | 1 | 632 | Wm. F. Healy. |
| N. 51st avenue | Irving Park boulevard. | Belle Plaine avenue | 1¼ | 676 | P. J. McNulty. |
| N. 51st avenue | Belle Plaine avenue | Berteau avenue | 1 | 668 | P. J. McNulty. |
| W. 57th street | S. Robey street | Winchester avenue | 2½ d. i. | 369 | Wm. F. Healy. |
| N. 42nd court | Milwaukee avenue | Roscoe street | 1 | 797 | Wm. F. Healy. |
| N. 44th court | Fullerton avenue | Belden avenue | 1 | 665 | Wm. F. Healy. |
| Francisco avenue | Wilson avenue | Alley N. of Montrose Ave. | 1 | 1,111 | Wm. F. Healy. |
| Francisco avenue | Eastwood avenue | Northwestern Elev. R. R. | 1 | 159 | Wm. F. Healy. |
| S. Harding avenue | W. 24th street | W. 26th street | 1 | 1,302 | Wm. F. Healy. |
| N. Harding avenue | Cornelia street | Roscoe street | 1 | 671 | Wm. F. Healy. |
| S. Hoyne avenue | 57th street | 58th street | 1 | 665 | Wm. F. Healy. |
| N. Humboldt avenue | Wilson avenue | Alley N. of Montrose Ave. | 1 | 1,112 | Wm. F. Healy. |
| N. Irving avenue | Addison street | Cornelia street | 1 | 632 | Wm. F. Healy. |
| N. Irving avenue | Addison street | Waveland avenue | 1¼ | 660 | Wm. F. Healy. |
| N. Irving avenue | Grace street | Waveland avenue | 1 | 671 | P. J. McNulty. |
| N. Kimball avenue | Lawrence avenue | Leland avenue | 1¼ | 664 | Wm. F. Healy. |
| N. Kimball avenue | N. Branch Chicago Riv. | Alley N. of Lawrence Ave. | 1 | 1,122 | Wm. F. Healy. |
| W. Lawrence avenue. | Western avenue | Campbell avenue | 1¼ | 659 | Wm. F. Healy. |
| W. Lawrence avenue. | Campbell avenue | Rockwell street | 1 | 665 | Wm. F. Healy. |
| N. Leavitt street | Addison street | Waveland avenue | 1¼ | 661 | Wm. F. Healy. |
| N. Leavitt street | Grace street | Waveland avenue | 1 | 671 | P. J. McNulty. |
| Leland avenue | Manor avenue | Sacramento avenue | 1 | 500 | Wm. F. Healy. |
| Lexington street | S. 52nd avenue | S. 51st avenue | 1¼ | 438 | Joe Savalano. |
| Manor avenue | Wilson avenue | California avenue | 1¼ | 481 | Wm. F. Healy. |
| Manor avenue | Wilson avenue | Eastwood avenue | 1¼ | 393 | Wm. F. Healy. |
| Manor avenue | Eastwood avenue | Leland avenue | 1 | 477 | Wm. F. Healy. |
| Mozart street | Wilson avenue | Alley N. of Montrose Ave. | 1 | 1,112 | Wm. F. Healy. |
| N. Oakley avenue | Byron avenue | Grace street | 1 | 683 | Wm. F. Healy. |
| N. Oakley avenue | Addison street | Cornelia avenue | 1 | 622 | Wm. F. Healy. |
| N. Oakley avenue | Addison street | Waveland avenue | 1¼ | 662 | Wm. F. Healy. |
| N. Oakley avenue | Waveland avenue | Grace street | 1 | 675 | Wm. F. Healy. |
| Oglesby avenue | 73rd street | 72nd street | 1¼ | 657 | John W. Brunt. |
| Oglesby avenue | 72nd street | Alley S. of 71st street | 1 | 525 | John W. Brunt. |
| Olive street | Southport avenue | Alley E. of Clark street | 1 | 922 | Rennacker Construction Co. |
| 108th place | Wentworth avenue | Princeton avenue | 1¼ | 662 | Wm. F. Healy. |
| 108th place | Princeton avenue | C. & W. I. R. R. | 1 | 570 | Wm. F. Healy. |
| Rhodes avenue | 63rd street | 62nd street | 1¼ | 647 | P. J. McNulty. |
| Rhodes avenue | 62nd street | 61st street | 1 | 623 | P. J. McNulty. |

| | | | | | |
|---|---|---|---|---|---|
| Roscoe street | Alley W. of 42nd Ave. | Alley E. of 43rd avenue. | 1 | 301 | Wm. F. Healy. |
| W. Roscoe street | N. Branch Chicago Riv. | California avenue | 1 | 654 | F. M. Walters. |
| W. Roscoe street | California avenue | 350 feet west | ¾ | 381 | F. M. Walters. |
| N. Sawyer avenue | Lawrence avenue | Argyle street | 1 | 1,329 | Wm. F. Healy. |
| Spaulding avenue | Argyle street | Chicago River | 1¼ | 540 | Wm. F. Healy. |
| Spaulding avenue | Argyle street | Alley N. of Lawrence Ave. | 1 | 1,153 | Wm. F. Healy. |
| N. Springfield avenue. | 330 feet north of Wabansia avenue | Subway | ¾ | 255 | Tony Ross. |
| S. Throop street | Chicago River | 22nd street | 2 s. r. | 1,568 | Federal Improvement Co. |
| W. Van Buren street | S. 48th avenue | S. 47th avenue | 1 | 625 | Jas. H. Roche. |
| Vernon avenue | 63rd street | 62nd street | 1¼ | 660 | P. J. McNulty. |
| Vernon avenue | 62nd street | 61st street | 1 | 663 | P. J. McNulty. |
| Vincennes avenue | 63rd street | 62nd street | 1¼ | 638 | P. J. McNulty. |
| Vincennes avenue | 62nd street | 61st street | 1 | 625 | P. J. McNulty. |
| Warner avenue | Western avenue | Campbell avenue | 1 | 667 | Wm. F. Healy. |
| Winchester avenue | Alley S. of Garfield bl. | W. 57th street | 1 | 1,040 | Wm. F. Healy. |
| Winchester avenue | W. 57th street | 240 feet S. of W. 58th St. | 1 | 940 | Wm. F. Healy. |
| | | | | 58,937 | |

## DRAINS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909.

| STREET | FROM | TO | No. of Drains | Length | Price per Foot | Cost |
|---|---|---|---|---|---|---|
| Addison street | W. Ravenswood Park | N. Western avenue | 50 | 1,750 | $0.32 | $ 560.00 |
| Avenue "H" | 103rd street | 105th street | 27 | 675 | .18½ | 124.88 |
| Avenue "H" | 105th street | 106th street | 26 | 650 | .21 | 136.50 |
| Avenue "H" | 106th street | 107th street | 2 | 70 | .15 9/10 | 11.13 |
| N. Avers avenue | W. North avenue | Wabansia avenue | 7 | 169 | .29 | 49.01 |
| Belle Plaine avenue | E. Ravenswood Park | 1st alley east | 11 | 275 | .28 | 77.00 |
| Bond avenue | 71st street | 75th street | 27 | 945 | .36 | 340.20 |
| Butler street | W. 115th street | W. 119th street | 32 | 1,120 | .22 | 246.40 |
| N. Central Park avenue | W. Fullerton avenue | Dickens avenue | 5 | 119 | .26 | 30.94 |
| N. Central Park avenue | ROCK | EXCAVATION. | | | | 60.00 |
| Charles street | W. 95th street | W. 99th street | 82 | 3,362 | .32 | 1,075.84 |
| Cheltenham place | Bond avenue | 79th street | 13 | 325 | .41 | 133.25 |
| W. Chicago avenue | N. 48th avenue | N. 52nd avenue | 118 | 4,671 | .36 | 1,681.56 |
| S. Claremont avenue | 35th street | Bross avenue | 61 | 2,135 | .20½ | 437.68 |
| N. Claremont avenue | Sunnyside avenue | Eastwood avenue | 15 | 525 | .38 | 199.50 |
| Coles avenue | 71st street | 75th street | 49 | 1,225 | .35 | 428.75 |
| Coles avenue | 75th street | 79th street | 34 | 850 | .41 | 348.50 |
| Coles avenue | ROCK | EXCAVATION. | | | | 282.00 |
| Coles avenue | 79th street | 81st street | 34 | 850 | .29 | 246.50 |
| Coles avenue | 82nd street | 83rd street | 2 | 50 | .45 | 22.50 |
| Coles avenue | ROCK | EXCAVATION. | | | | 36.00 |
| Cottage Grove avenue | 75th street | 79th street | 130 | 4,750 | .44½ | 2,113.75 |
| Cullom avenue | N. Robey street | Lincoln avenue | 23 | 582 | .24 | 139.68 |
| Dobson avenue | 75th street | 79th street | 72 | 2,520 | .23 | 579.60 |
| Drexel avenue | 75th street | 79th street | 78 | 2,730 | .23 | 627.90 |
| E. Ravenswood Park | Montrose avenue | Irving Park boulevard | 24 | 840 | .30 | 252.00 |
| Eastwood avenue | Lincoln avenue | N. Western avenue | 2 | 70 | .22 | 15.40 |
| Eggleston avenue | W. 115th street | W. 119th street | 35 | 1,225 | .22 | 269.50 |
| 80th street | Coles avenue | Exchange avenue | 15 | 375 | .25 | 93.75 |
| 80th place | Houston avenue | Exchange avenue | 7 | 175 | .25 | 43.75 |
| 81st street | Houston avenue | Exchange avenue | 8 | 200 | .44 | 88.00 |
| 81st street | ROCK | EXCAVATION. | | | | 69.00 |
| 82nd street | So. Chicago avenue | B. P. & C. R. R. | 12 | 300 | .44 | 132.00 |
| 82nd street | ROCK | EXCAVATION. | | | | 330.00 |
| W. 82nd street | S. Halsted street | C. R. I. & P. R. R. | 10 | 350 | .39 | 136.50 |
| 83rd street | Coles avenue | Baltimore avenue | 5 | 125 | .48 | 60.00 |
| 83rd street | ROCK | EXCAVATION. | | | | 190.00 |
| Ellis avenue | 75th street | 79th street | 36 | 1,260 | .23 | 289.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Emerald avenue | Vincennes road | W. 87th street | 8 | 280 | .26½ | 74.20 |
| Escanaba avenue | Railroad avenue | 79th street | 5 | 125 | .34 | 42.50 |
| Escanaba avenue | 79th street | 83rd street | 45 | 1,125 | .46 | 517.50 |
| Escanaba avenue | ROCK | EXCAVATION. | | | | 1,152.00 |
| Ewing avenue | 105th street | 106th street | 21 | 735 | .24 | 176.40 |
| Exchange avenue | 79th street | 83rd street | 130 | 3,250 | .34 | 1,105.00 |
| Exchange avenue | ROCK | EXCAVATION. | | | | 2,250.00 |
| N. 51st avenue | Bloomingdale road | Moffatt street | 11 | 275 | .24 | 66.00 |
| N. 40th court | W. North avenue | Le Moyne street | 11 | 275 | .37 | 101.75 |
| S. 41st avenue | W. 31st street | W. 32nd street | 7 | 175 | .27 | 47.25 |
| N. 45th avenue | W. Berteau avenue | W. Irving Park boulevard | 27 | 729 | .24 | 174.96 |
| N. 46th avenue | W. Wilson street | W. Montrose avenue | 20 | 540 | .27 | 145.80 |
| N. 46th court | W. Lawrence avenue | W. Montrose avenue | 43 | 1,075 | .33 | 354.75 |
| N. 47th avenue | W. Wilson avenue | Avondale avenue | 15 | 375 | .26 | 97.50 |
| Gilbert court | Vincennes road | C. R. I. & P. R. R. | 31 | 1,085 | .26 | 282.10 |
| Givins court | Vincennes road | C. R. I. & P. R. R. | 17 | 340 | .24 | 81.60 |
| Greenbay avenue | 83rd street | 86th street | 60 | 1,500 | .48 | 720.00 |
| Greenwood avenue | 75th street | 79th street | 35 | 1,225 | .23 | 281.75 |
| S. Hamlin avenue | W. 28th street | W. 30th street | 41 | 1,025 | .24 | 246.00 |
| N. Hamlin avenue | W. Fullerton avenue | Armitage avenue | 80 | 2,800 | .39 | 1,092.00 |
| S. Harding avenue | W. 19th street | W. 22nd street | 4 | 100 | .23 | 23.00 |
| Houston avenue | 80th street | 81st street | 15 | 375 | .32 | 120.00 |
| Houston avenue | ROCK | EXCAVATION. | | | | 42.00 |
| Houston avenue | 82nd street | 83rd place | 2 | 50 | .46 | 23.00 |
| Howard avenue | Washington boulevard | W. Madison street | 16 | 480 | .29 | 139.20 |
| Indiana avenue | 68th street | 69th street | 26 | 1,118 | .24½ | 273.91 |
| Indiana avenue | 118th street | 119th street | 10 | 400 | .23 | 92.00 |
| Ingleside avenue | 75th street | 79th street | 80 | 2,800 | .23 | 644.00 |
| •N. Irving avenue | Waveland avenue | Grace street | 40 | 720 | .30 | 216.00 |
| Jackson avenue | 65th street | 67th street | 61 | 1,525 | .35 | 533.75 |
| Jackson avenue | 75th street | 79th street | 81 | 2,835 | .23 | 652.05 |
| Jackson Park avenue | 67th street | 71st street | 91 | 2,672 | .51½ | 1,376.08 |
| Kenwood avenue | 48th street | 49th street | 24 | 600 | .30 | 180.00 |
| Kerfoot avenue | Vincennes road | C. R. I. & P. R. R. | 32 | 1,120 | .24½ | 274.40 |
| Langley avenue | 49th street | 50th street | 8 | 216 | .46 | 99.36 |
| Lawrence avenue | W. Ravenswood Park | N. Western avenue | 86 | 1,520 | .39 | 592.80 |
| Lowe avenue | Vincennes road | W. 87th street | 5 | 175 | .27 | 47.25 |
| •Luella avenue | 71st street | 72nd street | 17 | 340 | .30 | 102.00 |
| Mackinaw avenue | 83rd street | 86th street | 40 | 1,400 | .39 | 546.00 |
| Magnolia avenue | Peterson avenue | 230 feet south | 18 | 630 | .18 | 113.40 |
| Marquette avenue | 77th street | 79th street | 21 | 525 | .39 | 204.75 |
| Marquette avenue | ROCK | EXCAVATION. | | | | 171.00 |
| Marquette avenue | 79th street | 81st street | 47 | 1,107 | .36 | 398.52 |
| Marquette avenue | ROCK | EXCAVATION. | | | | 774.00 |

•Private contract.

## DRAINS CONSTRUCTED BY SPECIAL ASSESSMENT DURING THE YEAR 1909.

| STREET | FROM | TO | No. of Drains | Length | Price per Foot | Cost |
|---|---|---|---|---|---|---|
| Milwaukee avenue | W. Irving Park boulevard | W. Lawrence avenue | 137 | 3,001 | .47 | 1,410.47 |
| S. Morgan street | W. 77th street | W. 79th street | 48 | 1,680 | .28 | 470.40 |
| Muskegon avenue | Railroad avenue | 83rd street | 61 | 1,525 | .35 | 533.75 |
| Muskegon avenue | ROCK | EXCAVATION. | | | | 756.00 |
| W. North avenue | N. 44th avenue | N. 48th avenue | 78 | 3,300 | .34 | 1,122.00 |
| 100th street | Michigan avenue | State street | 22 | 628 | .28 | 175.84 |
| W. 101st street | Prospect avenue | S. Wood street | 26 | 910 | .29 | 263.90 |
| 102nd place | State street | Michigan avenue | 15 | 375 | .26 | 97.50 |
| W. 108th street | State street | Wentworth avenue | 29 | 1,005 | .26 | 261.30 |
| W. 108th place | State street | Wentworth avenue | 33 | 825 | .23½ | 193.88 |
| W. 115th street | S. Halsted street | Stewart avenue | 70 | 2,450 | .22 | 539.00 |
| W. 116th street | Wallace street | Stewart avenue | 29 | 1,015 | .22 | 223.30 |
| W. 117th street | Wallace street | Stewart avenue | 44 | 1,540 | .22 | 338.80 |
| W. 118th street | Parnell avenue | Stewart avenue | 19 | 665 | .22 | 146.30 |
| W. 118th place | Michigan avenue | Indiana avenue | 8 | 280 | .23 | 64.40 |
| Ontario avenue | 79th street | 85th street | 87 | 2,175 | .35 | 761.25 |
| Palmer avenue | 70th street | 72nd street | 12 | 240 | .30 | 72.00 |
| Parnell avenue | W. 84th street | W. 87th street | 3 | 105 | .26 | 27.30 |
| Parnell avenue | W. 115th street | W. 119th street | 46 | 1,610 | .21 | 338.10 |
| S. Paulina street | W. 38th street | W. 39th street | 23 | 875 | .23 | 201.25 |
| Pensacola avenue | N. Robey street | Lincoln avenue | 3 | 75 | .39 | 29.25 |
| Rhodes avenue | 60th street | 61st street | 10 | 320 | .25 | 80.00 |
| *Rhodes avenue | 61st street | 63rd street | 70 | 1,400 | .30 | 420.00 |
| Saginaw avenue | 75th street | 77th street | 9 | 225 | .44 | 99.00 |
| Saginaw avenue | ROCK | EXCAVATION. | | | | 351.00 |
| Saginaw avenue | 77th street | 79th street | 22 | 550 | .40 | 220.00 |
| Scott place | S. Spaulding avenue | S. Homan avenue | 6 | 150 | .27 | 40.50 |
| S. Seeley avenue | W. 95th street | W. 99th street | 85 | 2,125 | .39 | 828.75 |
| S. Seeley avenue | W. 103rd street | W. 107th street | 45 | 1,655 | .60 | 993.00 |
| 75th street | Bond avenue | Railroad avenue | 7 | 175 | .41 | 71.75 |
| 76th street | Coles avenue | Colfax avenue | 5 | 125 | .44 | 55.00 |
| 76th street | Greenwood avenue | Cottage Grove avenue | 29 | 1,160 | .23 | 266.80 |
| 76th street | Marquette avenue | Saginaw avenue | 7 | 175 | .40 | 70.00 |
| 76th place | Coles avenue | Marquette avenue | 9 | 150 | .44 | 66.00 |
| 76th place | ROCK | EXCAVATION. | | | | 147.00 |
| 77th place | Coles avenue | Railroad avenue | 18 | 360 | .34 | 122.40 |
| 78th place | Coles avenue | Railroad avenue | 5 | 75 | .34 | 25.50 |
| 79th street | Saginaw avenue | Sherman avenue | 54 | 1,170 | .24 | 280.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 79th street | ROCK | EXCAVATION. | | | | 2,190.00 |
| 79th place | Coles avenue | Commercial avenue | 21 | 630 | .33 | 207.90 |
| Sherman avenue | 79th street | 81st street | 28 | 700 | .32 | 224.00 |
| Sherman avenue | ROCK | EXCAVATION. | | | | 660.00 |
| W. 66th place | Union avenue | S. Halsted street | 10 | 300 | .28 | 84.00 |
| W. 69th street | S. Marshfield avenue | S. Leavitt street | 173 | 6,055 | .39 | 2,361.45 |
| Southport avenue | Devon avenue | Albion avenue | 17 | 595 | .22 | 130.90 |
| *S. Springfield avenue | W. 16th street | Ogden avenue | 91 | 2,275 | .23 | 523.25 |
| N. Springfield avenue | Wabansia avenue | Bloomingdale avenue | 9 | 225 | .26 | 58.50 |
| W. 39th street | S. California avenue | S. Western avenue | 41 | 1,025 | .23 | 235.75 |
| *Throop street | 22nd street | Lumber street | 39 | 1,589 | .40 | 635.60 |
| S. Troy street | C. B. & Q. R. R. | W. 22nd street | 7 | 245 | .27 | 66.15 |
| N. Troy street | W. Waveland avenue | Elston avenue | 39 | 1,365 | .26 | 354.90 |
| Union avenue | Vincennes road | W. 87th street | 16 | 560 | .27 | 151.20 |
| *Vernon avenue | 61st street | 63rd street | 70 | 1,400 | .30 | 420.00 |
| *Vincennes avenue | 61st street | 63rd street | 70 | 1,400 | .30 | 420.00 |
| Vincennes avenue | 60th street | 61st street | 25 | 800 | .24 | 192.00 |
| Vincennes avenue | W. 81st street | C. R. I. & P. R. R. | 101 | 3,535 | .39½ | 1,396.33 |
| Wallace street | W. 85th street | W. 87th street | 7 | 245 | .22 | 53.90 |
| Wallace street | W. 115th street | W. 116th street | 6 | 210 | .22 | 46.20 |
| *N. Western avenue | Grace street | Roscoe street | 69 | 1,725 | .40 | 690.00 |
| *S. Winchester avenue | W. 55th street | W. 59th street | 102 | 2,040 | .30 | 612.00 |
| S. Winchester avenue | W. 91st street | W. 95th street | 17 | 425 | .24 | 102.00 |
| | Total | | 4,515 | 134,348 | | $52,585.82 |

*Private contract.

# TOTAL COST OF CONSTRUCTION OF SEWERS AND CATCH-BASINS AND MAINTAINING SAME SINCE THE ESTABLISHMENT OF THE SEWERAGE SYSTEM IN 1855 TO JANUARY 1, 1910.

| Year | Lineal feet of Sewers Built | No. of Catch-Basins Built | No. of Man-holes Built | No. of House Drains put in | Cost of Cleaning Sewers and Catch-Basins | Street Intersections and Repairs of Sewers | Cost of Construction |
|---|---|---|---|---|---|---|---|
| Previous to 1861 | 283,586 | 1,174 | 2,102 | 2,194 | $ 5,619.48 | No amounts found on reports | $ 665,188.46 |
| 1861 | 2,826 | 18 | 33 | 243 | 1,715.60 | $ 2,951.76 | 3,617.31 |
| 1862 | 15,676 | 72 | 66 | 365 | 4,897.24 | 3,024 07 | 57,036.42 |
| 1863 | 39,605 | 192 | 204 | 536 | 5,065 40 | 2,058.11 | 169,527.38 |
| 1864 | 25 021 | 189 | 183 | 512 | 9.417 81 | 4.597.63 | 87,221.48 |
| 1865 | 29,948 | 223 | 168 | 1,288 | 13.818.07 | 7,493.56 | 137,643.02 |
| 1866 | 48,127 | 327 | 271 | 3.732 | 28,445.16 | 773.65 | 225,564.53 |
| 1867 | 80,681 | 418 | 555 | 3.703 | 26,540.81 | 9.581.42 | 416,730.51 |
| 1868 | 47,841 | 480 | 293 | 3.261 | 26 954.06 | 11.287.08 | 197,152.92 |
| 1869 | 139,705 | 771 | 928 | 3,979 | 26,015.68 | 7,527 16 | 654,141.26 |
| 1870 | 78,166 | 626 | 468 | 5,187 | 21,464 30 | 10,954.74 | 258,684.70 |
| 1871 | 50,716 | 277 | 357 | 3,093 | 17,415.46 | 42,557.72 | 153,295.36 |
| 1872 | 47,342 | 245 | 341 | 1,435 | 21,484.16 | 16,975.40 | 173,255.76 |
| 1873 | 146.702 | 897 | 1.015 | 4,691 | 31,229.27 | 29,781.97 | 450,222.90 |
| 1874 | 222,322 | 1,054 | 1,474 | 6,292 | 36,884.57 | 21,996.72 | 587,507.38 |
| 1875 | 120,971 | 958 | 789 | 3.365 | 32,098.23 | 28,107.40 | 342,982.59 |
| 1876 | 15.248 | 155 | 75 | 1,172 | 29,545.41 | 19,803.29 | 79,545.28 |
| 1877 | 64.666 | 363 | 431 | 1.822 | 35.763.33 | 16,959.44 | 291,829.63 |
| 1878 | 88.031 | 492 | 603 | 1,844 | 25,701.37 | 19.259.49 | 37,364.97 |
| 1879 | 145,381 | 820 | 1,043 | 2,953 | 29.286.67 | 10 649.69 | 130,840.50 |
| 1880 | 79.128 | 271 | 554 | 4.196 | 25.561.48 | 25,068.11 | 92,544.08 |
| 1881 | 132,076 | 548 | 917 | 4,810 | 34.512.15 | 30,967.89 | 452,310.06 |
| 1882 | 98 515 | 792 | 725 | 5,677 | 33,969.35 | 26,618.05 | 224,450.16 |
| 1883 | 75,364 | 835 | 497 | 5,963 | 34,749.74 | 25.140.81 | 231,084.33 |
| 1884 | 101,347 | 751 | 654 | 5,957 | 43,678.03 | 37,893.29 | 258,020.91 |
| 1885 | 118,647 | 796 | 854 | 6.325 | 46.532.18 | 45.383 02 | 303,188.03 |
| 1886 | 103,193 | 734 | 723 | 7.441 | 51.110.46 | 50,707.64 | 177,647.24 |
| 1887 | 90,584 | 756 | 605 | 8 100 | 50 264 65 | 43,789.60 | 185,496.98 |
| 1888 | 104,903 | 816 | 674 | 8,152 | 52,422.41 | 58,782.07 | 228 567.57 |
| 1889 | 171,023 | 1.351 | 1,190 | 4,303 | 61.503.01 | 63.459.25 | 350,234.54 |
| Annexed Districts previous to 1890 | 993,573 | 6.102 | 8,620 | Estimated cost of construction cost of maintenance not known | | .............. | 2,614,224.75 |
| 1890 | 379.203 | 2,986 | 2.604 | 9,279 | 107.873 34 | 83,383.08 | 826,718.67 |
| 1891 | 546.918 | 3.979 | 3.736 | 11.312 | 123.620.44 | 95,906.75 | 1,582,990.44 |
| 1892 | 549.258 | 3,866 | 3,714 | 12,562 | 142.720.52 | 70,747.83 | 1,290,017.98 |
| Norwood and Rogers Park annexed previous to 1893 | 96,697 | 326 | 231 | No. of house drains and cost of construction not known | | .............. | 172,846.30 |
| 1893 | 708.176 | 4.811 | 4.825 | 14,198 | 132,633 51 | 114.702.78 | 1,606,720.09 |
| 1894 | 350.944 | 2,597 | 2,259 | 8.928 | 154.225.45 | 130,749.03 | 1,014,489.86 |
| 1895 | 196,349 | 1,515 | 1,409 | 1.621 | 134.424.44 | 93,713.66 | 356,950.01 |
| 1896 | 303,172 | 2,201 | 1,990 | 6.161 | 96 901.65 | 91,339.54 | 721,889.88 |
| 1897 | 206.450 | 1,842 | 1.550 | 8.241 | 91.414.89 | 90,651.29 | 446,249.53 |
| 1898 | 256.618 | 1.812 | 1,916 | 2,635 | 92.961 88 | 100,996.06 | 682,229.10 |
| 1899 | 191.790 | 1.466 | 1,384 | 2.647 | 72.439.07 | 84,004.37 | 793,623.28 |
| Part of Town of Cicero annexed previous to 1900 | 154.895 | 995 | 1.075 | No. of house drains, cost of maintenance and cost of construction not known | | | |
| 1900 | 155,866 | 1,591 | 1 176 | 4,750 | 80.985.64 | 102.677.89 | 475,733.36 |
| 1901 | 117.546 | 899 | 906 | 5.598 | 94.309.87 | Sewer Repairs 55,965 24 | 454,273.53 |
| 1902 | 138 311 | 1,326 | 927 | 8,482 | 99.372 58 | 57,492.79 | 1,398 329.60 |
| 1903 | 188,793 | 1.795 | 1,351 | 6,107 | 118,303.41 | 68,522 45 | 989,502.50 |
| 1904 | 206.542 | 1.913 | 1,498 | 3.986 | 124.260 26 | 77,952.77 | 591.402 39 |
| 1905 | 169,962 | 2.226 | 1.191 | 5 850 | 127,003 97 | 78,819.10 | 670,908.39 |
| 1906 | 226,340 | 2,680 | 1,646 | 7,958 | 150.942 10 | 83.969.49 | 1,606.248 28 |
| 1907 | 281.614 | 3,053 | 2,078 | 10,036 | 204,329.87 | 103.372 00 | 1,103,856.66 |
| 1908 | 279.483 | 2,920 | 1,956 | 10,438 | 233,093.89 | 110,709.17 | 1,009,540.44 |
| 1909 | 354,283 | 4.115 | 2,506 | 11.302 | 231,692 61 | 100,974.21 | 1,181.078.70 |
| Total | *9,829,159 | †74,383 | ‡69,296 | 264,532 | $ 3,477,036.83 | $ 2,475,745.43 | $29,061,530.41 |

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*Of this amount 124.767 feet have been taken up and replaced by sewers of larger size, leaving in place January 1, 1910, 9,704.392 lineal feet or 1.838 miles. Of this amount 639.5 miles are of brick construction and 1.198.5 miles are of vitrified tile pipe.

†Of this number 540 catch-basins have been abandoned, leaving in place January 1, 1910, 73.843

‡Of this number 915 manholes have been abandoned, leaving in place January 1, 1910, 68,381.

## BENCH MARKS AND STREET GRADES.

W. H. HEDGES, BENCH AND STREET GRADE ENGINEER.

### STANDARD BENCH MONUMENTS.

During the year 1909, the running of exact levels to determine the elevation above City datum of new standard Bench Monuments and Benches, was continued whenever the weather was suitable for levels of that particular character. The new territory in which the work was done, was from 106th street down into Hegewisch, and to E. 134th street in the southwest corner of the Town of Hyde Park; also in all the Town of Calumet south of West 95th street. The exact levels run this year, determined the elevations of the bench points above City datum, for 19 new Bench Monuments in the territory above mentioned. The numbers given these 19 monuments, and the elevations above City datum of their bench points, were duly reported to the City Council for confirmation, and regularly established by Council Ordinance December 20, 1909, page 2165 Council Proceedings. With the completion of these 19 Bench Monuments, all the south part of the City known as the "Town of Hyde Park," the "Town of Calumet," and the east half of the "Town of Lake," is now all provided with completed concrete Standard Bench Monuments, at an average distance of one mile apart, east and west, and north and south. A reference to the map accompanying this report, will show the territory not yet provided with completed bench monuments; viz.: The west half of the "Town of Lake"; that part of the City west of 40th avenue and between 39th street and North avenue; that part of the City west of 56th avenue and between North avenue and Lawrence avenue, and all that part of the City north of Lawrence avenue.

With the 132 completed monuments established previously to this year, we now have in the City a total of 151 completed Standard Bench Monuments, the elevations of whose bench points have been carefully determined by exact levels, and regularly established by Council Ordinances.

In the fall of 1909 twenty-eight new Concrete Bench Monuments were built, in the west half of the "Town of Lake" and in that part of the City west of 40th avenue and between 39th street and Fullerton avenue. The work was done by two of the City repair gangs in the Bureau of Sewers, at an average cost of thirty-two and eighty-eight one hundredths ($32.88) dollars per monument. With the building this year of these 28, we now have built a total of 179 Concrete Standard Bench Monuments; 151 of these have been completed by the running of the exact levels establishing the elevation of their bench points above City datum. This leaves 28 monuments built at the close of the year 1909, that have yet to be completed by the running of the exact levels that shall establish their elevations. The levels in completion of these monuments, will be carried forward as rapidly as possible during this year 1910. In order to provide for the further extension of these benches into the northwest and northern limits of the City, it will be necessary in the fall of 1910 to build about 20 more monuments ready for the levels to be run in 1911.

The widening of Michigan avenue on its east side, by the South Park Commissioners, has resulted in the destruction during the past year of Bench Monument No. 2 at Michigan avenue and Congress street, and of Bench Monument No. 3 at Michigan avenue and Harmon place. It has not been considered desirable to build another monument at Congress street to take the place of No. 2, as we now have several Bench Marks conveniently near that locality, on buildings that rest on concrete caissons down to the underlying rock, that are considered to be of the most reliable character.

At Michigan avenue and Harmon place, however, a new Bench Monument was built near the east side of the new cement walk, to take the place of old Monument No. 3, which is now destroyed by coming in the new roadway of Michigan avenue. This new monument was given the No. 135 in our list of monuments, and exact levels were run that determined the elevation of its bench point. It was among those Bench Monuments acted upon by the Council in the ordinance passed December 20, 1909, page 2165 Council Proceedings.

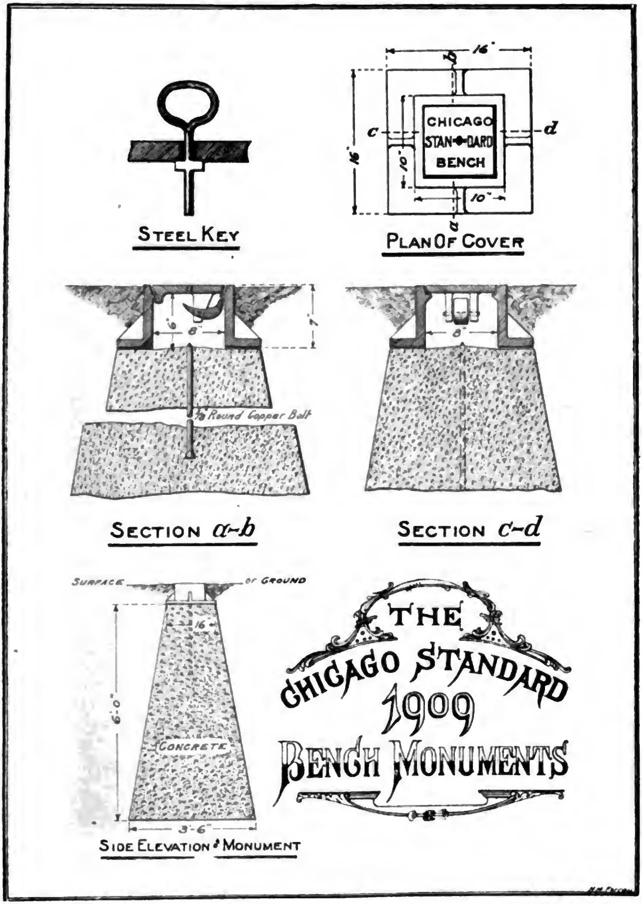
## BENCH MARKS.

Among Civil Engineers and Surveyors, any carefully described point, whose elevation has been determined in relation to an established datum line or plane, is called a bench or bench mark. The points chosen may be on trees, buildings, hydrants, curbstones, catchbasins, etc., it being desirable that the most permanent points available be chosen in each case. So in running the lines of exact levels from one Bench Monument to another, benches of this ordinary kind were established wherever opportunity offered, as a matter of convenience for the use of Civil Engineers and Surveyors, in cases not requiring great accuracy.

While these benches are recorded in our bench books, they are not given any number, and are not considered as official in their character, the same as the Bench Monuments.

The insecure and changeable character of the most of the points used, makes it unsafe to rely upon any one of them alone; especially after it has been established a number of years. A note to this effect in the bench books provides that when used they shall check from any one bench to some other one. In case of disagreement between any two such benches, it must be referred to the nearest Bench Monument, for the correct official elevation. In running the exact levels from one Bench Monument to another during the year 1909, one hundred and sixteen (116) ordinary benches, were placed on the best points found available to the lines followed. This makes a total of 1,496 ordinary benches established since the beginning of this system of levels. Of this number, however, many of those first established have been destroyed or changed, so as to no longer be of use. Of late years the making use of concrete caissons carried down to the rock, as the foundation on which to rest heavy new buildings in the down town district, has seemed to furnish an opportunity for providing benches on such buildings of a very permanent character; and in the last two years we have established a number of

The widening of Michigan avenue on its east side by the South Park


16"
b
c
d
CHICAGO
STAN◆DARD
BENCH
16"
10"
10"
a
STEEL KEY
PLAN OF COVER
6"
8"
7"
½ Round Copper Bolt
8"
SECTION a-b
SECTION c-d
SURFACE OF GROUND
16"
6'-0"
CONCRETE
3'-6"
SIDE ELEVATION OF MONUMENT
THE
CHICAGO STANDARD
1909
BENCH MONUMENTS

benches on such buildings. If first class concrete is used in the caissons, there is little doubt as to the stability of these buildings. It is rumored, however, that very poor concrete has been used in some cases. Partly because of that rumor, we have adopted the rule not to establish a bench on a building with caisson foundation, until one year after the completion of the building. It is not thought likely that any movement in any case will take place in the building after that time. While benches on such buildings are considered of more value than other ordinary benches, as regards accuracy and permanence, they are not to be considered as equal in value to the Standard Bench Monuments. No one of these benches should be used alone as can the Bench Monuments; but any bench used should be checked by some other bench to insure accuracy. We have within the last two years in the down town district, established ten benches on points chosen on such buildings. They are as follows:

Marshall Field Building, south-east corner of State street and Randolph street.

Heyworth Building, Madison street and Wabash avenue.

Railway Exchange Building, Michigan avenue and Jackson boulevard.

Electric Building, No. 84 Market street, south of Washington street.

Thomas Church Building, Monroe street and Wabash avenue.

East Entrance County Building, west side of Clark street, north of Washington street.

Maurice Rothschild Building, State street and Jackson boulevard.

C. & N. W. Office Building, Franklin street and Jackson boulevard.

Congress Hotel, west side of Michigan avenue, north of Harrison street.

Mandel Brothers Annex, Madison street and Wabash avenue.

It is expected that the number of this class of benches on rock caisson buildings in the down town district will be increased during the year 1910, after such new buildings have been completed for a year, in accordance with the rule already above mentioned.

## STREET GRADES.

Before the development of the present system of establishing and recording street grades, the only record made or kept of street grades, was by placing the figures on the sewer maps when the ordinance was passed. There were no means of knowing where to find the ordinance, or when it was passed. There were no means of knowing whether the figures on the maps had really ever been established at all by Council ordinance. The sewer maps were open to all persons without any check, and any one could put any figures desired thereon. In some cases when changes of grade were really made by ordinance, the new grades were through neglect not placed on the sewer maps at all. This want of method caused great difficulty in making street and sewer improvements under the special assessment system, because when cases were brought into court, if the grades were disputed, the court always ruled that the figures on the maps were not evidence: That the ordinance itself was the only legal proof of street grade; and it was found that looking for record of an ordinance, that might have been passed at some unknown time within the previous 25 years, was a good deal like looking for a needle in a haystack. The uncertainty of proving that any given grade had really ever been legally established by an ordinance, was the source of much difficulty and contention, in all public and private improvements dependent in any way upon street grades.

Now all this is changed. The books devised by the Bench and Grade Engineer, and now kept in this Division of the Bureau of Sewers, show at a glance when street grade at any point was first established, and all changes of grade that may since have been made at that point. The record shows the grade, the dates on which the ordinances were passed, and the pages of Council Proceedings on which the ordinances are to be found. These books are maintained in this Bureau, are at all times open to the public, and constitute the only official record in relation to street grades.

The sewer maps already previously referred to, are now kept in the rooms of the Board of Local Improvements, and this Bureau keeps the street grade figures posted therein right up to date, as a matter of convenience sometimes, in having the grades spread before the eye in map form, but such map record is so inadequate and incomplete, and the possibilities of error so great, that the complete history of each point, as found in the grade books, is the only and conclusive official record of street grades to be relied on, and for which this Bureau is responsible. No work dependent on or referring to the street grade should be undertaken, without at the time consulting the grade books (not the sewer maps), in this Bureau. Chapter 29 of the Revised Municipal Code of 1905, Chicago, entitled "Grades," page 273, paragraph 954, provides that "All ordinances fixing the grade of streets in the City shall be referred to the Superintendent of Sewers, and shall be passed by the City Council **ONLY** upon the recommendation of said Superintendent," approved by the Commissioner of Public Works.

It is necessary therefore in order to avoid mistakes and confusion, that the thousands of street grades proposed yearly in the street improvement estimates, made by the Engineers of the Board of Local Improvements, shall before passing into the Special Assessment Department, be carefully examined by this Bureau, and when approved, that all new grades and changes of old grades shall be noted and the new figures be properly entered in our grade books, and placed on the sewer maps.

481 such street improvement estimates were submitted to this Bureau and passed upon in 1909.

For the same reasons as noted above, all the sidewalks plats prepared by the Engineers of the Sidewalk Division in the Board of Local Improvements, are referred to this Bureau for examination and acceptance of the grades proposed therein. The grades in 397 such sidewalk plats were also referred to this Bureau and acted upon during the year —(1909). Whenever new grades or changes in old grades are found in the street improvement ordinances and sidewalk plats presented for consideration, they are, when approved by this Bureau, placed in a list of grades and submitted to the City Council, for an ordinance establishing the new grades given.

1482 new street grades have been determined upon by this Bureau in the year 1909, and on being sent into the City Council for action, have at different times been accepted and duly established by Council Ordinance.

Respectfully submitted,

WM. E. QUINN,
Supt. Bureau of Sewers.

# ANNUAL REPORT
# BUREAU OF WATER
## CITY OF CHICAGO
## 1909

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W. J. McCOURT
SUPERINTENDENT

# BUREAU OF WATER

CHICAGO, April 18, 1910.

HON. JOHN J. HANBERG,
COMMISSIONER OF PUBLIC WORKS.

DEAR SIR:—I have the honor to submit below the annual report of the results accomplished by the Bureau during the year 1909, the second year of my incumbency as Superintendent thereof.

The gross collections during 1909 amounted to $5,194,140.18, an increase of $417,727.68 or 8.7% over 1908.

The net income for the year amounted to $4,758,524.86, an increase of $540,448.82 or 12.81% over 1908.

The general assessments account aggregated $3,365,647.10, an increase of $217,741.30 or 6.9% over 1908.

The meter rates revenue for the year amounted to $2,166,224.52, an increase of $145,903.41 or 7.2% over 1908.

The decrease of $52,649.10 in the amount of free water service rendered as shown is due to the fact that inspections were made upon all premises within Chicago under a careful interpretation of the exemption ordinances.

The miscellaneous collections show an increase of $410.61 over 1908. This does not include $4,334.66 earned on account of water used in the construction of cement walks on account of contractors not having filed their reports sufficiently early to permit of the same being vouchered during 1909.

During the year personal inspections by the field assessors totaled 158,117.

In the Shut-off subdivision the work was performed by a force of 22 men, who completed 67,496 operations, and in 1908 the same number of men completed 61,186 operations, while 32 men were employed to complete 62,816 operations in 1907.

Permits were issued for the installation of 10,443 service pipes, as against 10,056 in 1908, and an increase in the receipts of $2,298.62 is shown.

Heretofore the monthly transcription of the 77 meter rate ledgers, including approximately 15,000 accounts, has required the services of as many as twelve men for one-half of each month, since the transcribing and footing had to be done by hand. This procedure caused the clerical work and collections of this subdivision to be delayed about fifteen days and, of course, was the cause of considerable expense. Suggestions were submitted for the manufacture of a specially constructed, duplex, electrically propelled transcribing and computing machine, personal to the accounting features involved and such machine since its installation, at a cost of $740.00, with two operatives, accurately writes and computes the monthly transcript of all the meter rates in twelve days, at a saving of $350.00 per month; thus saving the employment of additional or overtime help.

The journalizing of the vouchers in the meter rates subdivision has also been changed from hand to machine operation, and work that could not be completed in a day by hand is now accurately done in an hour.

An electric sealing and stamping machine, which registers the stamps, has been installed at an expense of $343.00. During 1909 a total of over 600,000 envelopes, with enclosed bills and correspondence, were sealed and stamped by this machine, saving the time of seven men during six months of the year, or approximately $4,200.

These results were secured under an expenditure of $318,869.83 or 6.1%. The proportion of expenditures as to gross collections for 1908 was 6.1% and the same during 1907.

During 1909 the 96 ward ledgers were balanced without overtime expense.

During 1908 and 1909 the gross collections have been increased $593,950.76 or 12%, the net income increased by $672,203.74 or 16%, the general assessments increased annually by $320,082.20 or 10% and the meter rates revenue increased by $218,121.62 or 11% without increasing the proportion of expense as established during 1907 and under an actual increase in the expenditures of only $34,818.00 or .6 of 1%.

This additional expense was occasioned by the completion of approximately 665,000 changes upon the records of the Bureau by reason of the new house numbering ordinance, the addition of about 23,000 new accounts and of adding and other machines, together with the completion of the house to house inspections, assessments and adjustments of the assessments levied against each premises within the City.

There are 14,883 water meters of twenty types in service; of this number, during 1909, 3,354 were removed to the shop, tested, found inaccurate, reconstructed, retested true and reinstalled in service. During 1908, 3,281 were handled in like manner and this policy of rehabilitation will be continued during 1910 under restricted appropriations. During 1909, 8,168 meters were repaired on the premises, 1,069 were controlled, 6,024 were tested, 4,399 counters were reconstructed at a cost of $1,451.67 and these counters, when repaired, for working efficiency are as good as new and have a value of $8,798.00 and showed a net gain to the city of $7,346.33, while 3,545 other necessary operations of benefit to the Bureau were performed.

A system for the segregation of costs in connection with each operation in the installations and repairs of water meters has been installed.

All material and tools are now indexed and kept in such manner as to permit an accurate monthly check of same and are stenciled for purposes of identification.

The salary increases in the Meter Mechanical Division, to conform with the union scale of wages during 1908 were fifty cents a day to the meter setters, making a total for the year of $2,352.28. In 1909 the increases were thirty cents to the plumbers and carpenters per day, fifty cents per day to the machinists, and ten cents per day to cement finishers and helpers, a total increase for the year of $570.00 and a total for the two years of $2,922.28.

On December 31, 1907, the total number of employes on the payrolls was 366 and on December 31, 1908, they numbered 318, while on December 31, 1909, the total number was 310.

The foregoing accomplishments, and as shown specifically in the following tables, are the results of the investigation and renovation of the Bureau, its methods and employes, which operations were instituted immediately after my appointment on January 2, 1908, and of the constructive and administrative work carried on since that date.

During the year several of the ordinances have been amended with good results and suggestions made to the Corporation Counsel for the amendment for the benefit of the Bureau of a number of the remaining ordinances. These proposed amendments will become effective upon passage of the recodified code.

In conclusion permit me to extend my appreciation of your courtesies and to assure you every effort will be made to secure added results during 1910.

Very respectfully,
W. J. McCOURT,
Superintendent of Water.

## TABLE No. I.

### ASSESSOR'S DIVISION—INSPECTION SUBDIVISION.
### BUILDINGS EXAMINED DURING 1909.

| Month | One-Story | Two-Story | Three-Story | Four-Story | Five-Story or Over | Special Exams | New Buildings | Exams. for Vacancies | Pipe Petitions | Hose | Leaks and Waste | Barns | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January ............ | 2,101 | 5,172 | 759 | 101 | 13 | 1,685 | 1,492 | 572 | 824 | ......... | 48 | 1,483 | 14,250 |
| February .......... | 1,841 | 2,650 | 277 | 46 | ......... | 1,611 | 1,785 | 312 | 485 | ......... | 29 | 1,193 | 10,228 |
| March .............. | 2,387 | 4,229 | 436 | 59 | 7 | 1,080 | 2.759 | 206 | 249 | ......... | 35 | 1,478 | 12,915 |
| April ............... | 2,561 | 5,667 | 1,090 | 137 | 19 | 746 | 1,690 | 71 | 139 | ......... | 30 | 1,361 | 13,511 |
| May ............... | 2,458 | 5,940 | 810 | 119 | 3 | 1.238 | 1,497 | 457 | 325 | ......... | 38 | 1.352 | 14,237 |
| June ............... | 929 | 2,369 | 2.084 | 1,396 | 386 | 1,350 | 2,887 | 670 | 217 | ......... | 62 | 1,279 | 13,628 |
| July ............... | 1,301 | 3,972 | 3,284 | 792 | 203 | 1,610 | 2,032 | 650 | 219 | 343 | 56 | 1,420 | 15,882 |
| August ............ | ......... | ......... | ......... | ......... | ......... | 1.308 | 3,632 | 521 | 156 | 2,564 | 82 | 497 | 8,760 |
| September ......... | 3,545 | 5,408 | 1,564 | 224 | 59 | 1,553 | 288 | 155 | 114 | 62 | 113 | 1,788 | 14,873 |
| October ............ | 1,281 | 2.599 | 1,255 | 397 | 81 | 4,457 | 2,692 | 96 | 583 | 5 | 79 | 1,112 | 14.637 |
| November ......... | 584 | 2,235 | 3,289 | 842 | 201 | 1.564 | 2,424 | 500 | 596 | ......... | 73 | 1,196 | 13,504 |
| December .......... | 704 | 2,424 | 2,102 | 637 | 52 | 1.377 | 2,298 | 768 | 236 | ......... | 73 | 1.021 | 11,692 |
| Totals—1909 ..... | 19,692 | 42,665 | 16,940 | 4,748 | 1,024 | 19,579 | 25.476 | 4,978 | 4.143 | 2,974 | 718 | 15,180 | 158,117 |
| Totals—1908 ..... | 24,534 | 56,244 | 17,060 | 4.274 | 1,172 | 18,306 | 20,489 | 3,506 | 4,888 | 3,001 | 561 | 17,896 | 171,931 |
| Totals—1907 ..... | 11,592 | 29,685 | 17.543 | 5,396 | 2,738 | 18,088 | 24.107 | 1.638 | 6.770 | 1,576 | 108 | 13,879 | 133,119 |

NOTE—Annual complete (house to house) examinations were made in the following wards: 32nd, 33rd, 34th, 35th, 1st, 2nd, 3rd, 4th, 5th, 6th and part of 7th.

## TABLE No. 11.

### ASSESSOR'S DIVISION—SHUT-OFF SUBDIVISION.
### WORK PERFORMED DURING 1909.

| Months | ASSESSED RATES | | | | | | METER RATES | | |
|---|---|---|---|---|---|---|---|---|---|
| | Shut-off for Non-Payment of Water Rates | Shut-off by Request of Owner or Agent | Service Pipes Cut | Notices Served for Non-Payment | Notices Mailed | Water Turned on | Shut-off for Non-Payment of Water Rates | Notices Served | Totals |
| January ........ | 114 | 235 | ............ | 3,538 | 5,026 | 120 | 11 | 232 | 9,276 |
| February ....... | 305 | 165 | ............ | 3,209 | 2.985 | 158 | 4 | 174 | 7,100 |
| March .......... | 210 | 63 | ............ | 3,287 | 2,237 | 209 | 21 | 480 | 6,507 |
| April ........... | 238 | 48 | ............ | 2,544 | 134 | 235 | 15 | 390 | 3.604 |
| May ............ | 292 | 354 | ............ | 1,563 | 138 | 137 | 21 | 446 | 2,951 |
| June ........... | 177 | 338 | ............ | 1,844 | 3,966 | 75 | 7 | 392 | 6.799 |
| July ........... | 285 | 211 | ............ | 2,719 | 5,666 | 117 | 25 | 454 | 9,477 |
| August ......... | 358 | 214 | ............ | 2,579 | 5.143 | 211 | 14 | 322 | 8.841 |
| September ...... | 170 | 109 | ............ | 2,365 | 99 | 153 | 1 | 33 | 2,930 |
| October ........ | 229 | 77 | ............ | 1,812 | 135 | 185 | 11 | 212 | 2,661 |
| November ..... | 177 | 387 | 1 | 1,186 | 134 | 82 | 7 | 231 | 2,205 |
| December ...... | 95 | 398 | ............ | 624 | 3,701 | 58 | 1 | 268 | 5,145 |
| Totals—1909. | 2,650 | 2,599 | 1 | 27,370 | 29,364 | 1,740 | 138 | 3,634 | 67,496 |
| Totals—1908. | 2,695 | 1,548 | 4 | 31,628 | 19,710 | 1,923 | 148 | 3,530 | 61,186 |
| Totals—1907. | 2.622 | 1,786 | 19 | 32,576 | 18,950 | 2,232 | 305 | 4,326 | 62,816 |

NOTE—Only 22 shut-off men were employed during 1908 and 1909, while during 1907 there were 32 men employed in this work.

## TABLE No. III.

## ASSESSOR'S DIVISION—PERMIT SUBDIVISION.
## DETAILED REPORT OF WORK PERFORMED DURING 1909.

| | ¾" | 1" | 1¼" | 1½" | 2" | Total. |
|---|---|---|---|---|---|---|
| Permits issued for three-quarter inch to two-inch pipes | 3,983 | 73 | 73 | 146 | 178 | 4,453 |
| Special permits for connections and repairs | | | | | | 704 |
| Permits issued by Council orders | 8 | ........ | ........ | 1 | 5 | 14 |
| Permits issued for street improvements (includes 1870 by private contract) | 5,124 | ........ | ........ | ........ | ........ | 5,124 |
| Permits issued for Smith patent sleeves and valves | ........ | ........ | ........ | ........ | 1 | 1 |
| | 9,115 | 73 | 73 | 147 | 184 | 10,296 |
| Permits issued for larger pipes | 3" | 4" | 6" | 8" | 12" | Total. |
| Scattering | 49 | 62 | 15 | 9 | 1 | 136 |
| By Council orders | 1 | 10 | ........ | ........ | ........ | 11 |
| | 50 | 72 | 15 | 9 | 1 | 147 |

| | |
|---|---|
| Service pipes installed prior to January 1, 1909 | 372,679 |
| Service pipes installed during the year 1909 | 10,443 |
| Total service pipes installed to Dec. 31, 1909 | 383,122 |

| | |
|---|---|
| Total receipts for permits issued during 1909 | $28,973.75 |
| Total receipts for permits issued during 1908 | 26,675.13 |
| Increase | $ 2,298.62 |

## TABLE NO. IV.

### ASSESSOR'S DIVISION.

### DETAILED STATEMENT OF ASSESSOR'S INCREASE AND DECREASE CHECKS FOR THE YEAR 1909.

| **Months** | INCREASES | | | DECREASES | | |
|---|---|---|---|---|---|---|
| | Back Tax | Current Tax | Total | Back Tax | Current Tax | Total |
| January | $ 950.56 | $ 16,384.20 | $17,334.76 | $ 333.07 | $ 3,722.49 | $ 4,055.56 |
| February | 967.25 | 8,753.61 | 9,720.86 | 163.16 | 2,414.86 | 2,578.02 |
| March | 306.83 | 9,005.36 | 9,312.19 | 631.33 | 1,085.17 | 1,716.50 |
| April | | 4,608.49 | 4,608.49 | 160.45 | 1,250.77 | 1,411.22 |
| May | 2,800.99 | 50,468.86 | 53,269.85 | 1,680.93 | 12,648.75 | 14,329.68 |
| June | 330.60 | 22,228.95 | 22,559.55 | 909.95 | 10,069.40 | 10,979.35 |
| July | 320.81 | 27,562.63 | 27,883.44 | 313.19 | 7,779.21 | 8,092.40 |
| August | 1,494.36 | 20,853.13 | 22,347.49 | 261.85 | 5,479.32 | 5,741.17 |
| September | 683.87 | 39,216.39 | 39,900.26 | 674.77 | 10,259.36 | 10,934.13 |
| October | 1,497.46 | 26,192.82 | 27,690.28 | 336.73 | 6,648.58 | 6,985.31 |
| November | 2,602.51 | 16,302.03 | 18,904.54 | 508.10 | 8,007.94 | 8,516.04 |
| December | 33.00 | 12,233.17 | 12,266.17 | 1,030.33 | 9,744.37 | 10,774.70 |
| Charitable | | | | 2,887.26 | 199,429.32 | 202,316.58 |
| Totals—1909 | $11,988.24 | $253,809.64 | $265,797.88 | $ 9,891.12 | $278,539.54 | $288,430.66 |
| Totals—1908 | $ 9,176.69 | $207,686.68 | $216,863.37 | $31,178.67 | $268,654.13 | $299,832.80 |

NOTE—$202,316.58 was decreased under the ordinances, exempting charitable, educational and other institutions, from the payment of water rates, and $26,328.75 additional appears as a decrease by reason of the transfers of Assessed Rates accounts, to the Meter Rates Ledgers, after meters were installed.

## TABLE No. V

### ASSESSOR'S DIVISION.

### DETAILED STATEMENT OF MUNICIPAL AND CHARITABLE FREE WATER SERVICE ACCOUNTS.

#### ASSESSED RATES.

| | | | |
|---|---|---|---|
| MUNICIPAL. | | | |
| Police Department | $ 3,277.45 | | |
| Fire Department | 3.528.25 | | |
| Public Schools | 75,363.25 | | |
| Public Baths | 3,125.50 | | |
| Small Parks | 10.605.00 | | |
| Electric Light Plants | 14,122.83 | | |
| Pumping Stations | 15,328.50 | | |
| Miscellaneous | 9,459.28 | | |
| | | $ 134,820.06 | |
| RELIGIOUS AND EDUCATIONAL. | | | |
| Churches and Parsonages | $ 29.020.87 | | |
| Parochial Schools | 22,660 97 | | |
| Hospitals | 7,341.13 | | |
| State Institutions | 136.50 | | |
| Miscellaneous | 8,337.05 | | |
| | | $ 67,496.52 | |
| Total Assessed Rates | | | $ 202,316.58 |

#### METER RATES.

| | | | |
|---|---|---|---|
| MUNICIPAL. | | | |
| Fire Department | $ 3.15 | | |
| Public Schools | 1,419.35 | | |
| State Institutions | 963.03 | | |
| Miscellaneous | 112.01 | | |
| | | $ 2,497.54 | |
| RELIGIOUS AND EDUCATIONAL. | | | |
| Churches and Parsonages | $ 5,277.27 | | |
| Parochial, Private Schools and Colleges | 4,503.99 | | |
| Hospitals | 11,582.47 | | |
| Asylums | 12,965.81 | | |
| Miscellaneous | 2,458.93 | | |
| | | $ 36,788.47 | |
| Total Meter Rates | | | $ 39.286.01 |
| Total Free Service (1909) | | | $ 241,602.59 |
| Total Free Service (1908) | | | $ 294,251.69 |
| Total Free Service (1907) | | | $ 201,509.10 |

NOTE—The decrease in the amount of free water service rendered is due to the fact that inspections were made of all premises during the last three years, and that such inspections were made under a very careful interpretation of the exemption ordinances.

## TABLE No. VI.

### ASSESSOR'S DIVISION.

### DETAILED STATEMENT OF ASSESSOR'S MISCELLANEOUS RECEIPTS AND EARNINGS FROM WATER USED FOR CONSTRUCTING CEMENT WALKS IN 1909

| MONTHS | Cement Walks | Sprinklers | Miscellaneous | Totals |
|---|---|---|---|---|
| January | $ 2,279.94 | $ 50.00 | $ 28.95 | $ 2,238.89 |
| February | ........ | ........ | 28.50 | 28.50 |
| March | 8.81 | 12.50 | 51.25 | 72.56 |
| April | 5.29 | 225.00 | 1,044.78 | 1,275.07 |
| May | 29.51 | 1,737.50 | 516.68 | 2,283.69 |
| June | 2.05 | 1,387.50 | 698.96 | 2,088.51 |
| July | 6.87 | 3,650.00 | 807.20 | 4,464.07 |
| August | 4.11 | 4,540.00 | 883.10 | 5,427.21 |
| September | 8.20 | 2,450.00 | 2,707.59 | 5,165.79 |
| October | 19.20 | 900.00 | 1,825.83 | 2,745.03 |
| November | 42.50 | 2,000.00 | 2,918.81 | 4,961.31 |
| December | 1,018.73 | 1,387.50 | 425.01 | 2,831.24 |
| Totals (1909) | $ 3,425.21 | $18,340.00 | $11,936.66 | $33,701.87 |
| Totals (1908) | 10,107.13 | 18,932.50 | 4,251.63 | 33,291.26 |
| Increase | ........ | ........ | $ 7,685.03 | $ 7,685.03 |
| Decrease | $ 6,681.92 | $ 592.50 | ........ | 7,274.42 |
| Net Increase | ........ | ........ | ........ | $ 410.61 |

NOTE—$4,334.66, earned on account of water used in the construction of cement walks, is not included in above table, final report of contractors not being filed in time to permit vouchering during 1909.

## TABLE No. VII.

### COLLECTIONS DIVISION—ASSESSED RATES SUBDIVISION.
### ANALYSIS OF GENERAL LEDGER.

| Wards | DEBIT | | | | | | CREDIT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Balances Jan. 1, 1909 | General Assessment | Increases | Refunds | Discounts on Refunds | Totals | Collections | Discounts on Collections | Decreases | Account Suspense | Balances Dec. 31, 1909 | Totals |
| 1st .... | $ 909.73 | $ 38,011.00 | $ 7,856.68 | $ 107.57 | $ 14.08 | $ 46,899.06 | $ 34,615.23 | $ 4,478.85 | $ 6,799.29 | .......... | $ 1,005.69 | $ 46,899.06 |
| 2nd .... | 1,353.77 | 63,729.25 | 6,511.40 | 131.01 | 15.70 | 71,741.13 | 54,354.80 | 8,198.93 | 7,614.32 | $ 23.06 | 1,550.02 | 71,741.13 |
| 3rd .... | 8,406.92 | 73,254.75 | 6,066.88 | 124.12 | 17.58 | 87,870.25 | 59,641.68 | 9,110.14 | 8,823.87 | .......... | 10,294.56 | 87,870.25 |
| 4th .... | 761.13 | 65,700.50 | 1,624.75 | 83.71 | 11.29 | 68,181.38 | 52,014.69 | 8,529.08 | 7,028.22 | .......... | 609.39 | 68,181.38 |
| 5th .... | 1,065.19 | 68,759.75 | 2,261.00 | 36.42 | 5.78 | 72,128.14 | 56,992.83 | 9,099.51 | 5,048.64 | .......... | 987.16 | 72,128.14 |
| 6th .... | 1,599.15 | 102,775.25 | 6,724.11 | 237.73 | 33.44 | 111,369.68 | 89,356.14 | 13,732.54 | 7,288.06 | .......... | 992.94 | 111,369.68 |
| 7th .... | 2,262.24 | 125,641.00 | 19,362.31 | 709.57 | 85.08 | 148,060.20 | 113,590.99 | 17,010.50 | 15,680.76 | 25.12 | 1,752.83 | 148,060.20 |
| 8th .... | 975.05 | 87,339.05 | 3,891.41 | 151.28 | 21.43 | 92,378.22 | 72,846.42 | 11,513.86 | 6,889.10 | .......... | 1,128.84 | 92,378.22 |
| 9th .... | 16,276.57 | 51,081.25 | 1,818.66 | 17.22 | 3.03 | 69,196.73 | 40,436.33 | 6,566.35 | 4,992.79 | .......... | 17,201.26 | 69,196.73 |
| 10th .... | 20,880.62 | 63,263.50 | 1,026.07 | 60.03 | 9.96 | 85,240.18 | 50,997.86 | 8,668.91 | 3,375.95 | .......... | 22,197.46 | 85,240.18 |
| 11th .... | 22,731.26 | 74,990.50 | 1,787.07 | 39.12 | 5.68 | 99,553.63 | 60,500.12 | 10,125.26 | 5,311.64 | .......... | 23,616.61 | 99,553.63 |
| 12th .... | 36,511.25 | 119,896.75 | 7,729.91 | 90.86 | 8.59 | 164,237.36 | 102,568.95 | 16,945.51 | 4,748.68 | .......... | 39,974.22 | 164,237.36 |
| 13th .... | 39,443.70 | 115,206.75 | 7,995.56 | 207.65 | 29.53 | 162,883.19 | 93,571.75 | 14,919.80 | 11,673.96 | 7.62 | 42,710.06 | 162,883.19 |
| 14th .... | 32,255.25 | 90,023.00 | 2,009.56 | 130.50 | 21.75 | 124,440.06 | 75,617.00 | 12,257.80 | 4,194.54 | .......... | 32,370.72 | 124,440.06 |
| 15th .... | 34,112.01 | 102,386.00 | 4,431.64 | 22.65 | 3.97 | 140,956.27 | 82,506.35 | 13,830.05 | 8,224.93 | .......... | 36,394.94 | 140,956.27 |
| 16th .... | 24,909.29 | 78,017.00 | 2,159.97 | 63.37 | 8.63 | 105,158.26 | 63,818.27 | 10,744.42 | 4,396.28 | .......... | 26,199.29 | 105,158.26 |
| 17th .... | 31,690.36 | 92,197.50 | 699.17 | 317.13 | 53.46 | 124,957.62 | 74,276.32 | 12,392.09 | 7,069.83 | .......... | 31,219.38 | 124,957.62 |
| 18th .... | 22,307.71 | 58,666.50 | 3,642.52 | 97.43 | 13.57 | 84,727.73 | 49,374.72 | 7,614.22 | 5,186.98 | .......... | 22,551.81 | 84,727.73 |
| 19th .... | 27,400.41 | 86,014.00 | 2,117.66 | 43.55 | 4.90 | 115,580.52 | 64,122.38 | 10,572.11 | 12,927.36 | .......... | 27,958.67 | 115,580.52 |
| 20th .... | 41,915.26 | 108,322.50 | 4,755.77 | 117.74 | 15.91 | 155,127.18 | 88,633.42 | 14,072.65 | 8,861.21 | .......... | 43,559.90 | 155,127.18 |
| 21st .... | 29,363.78 | 75,813.00 | 1,787.54 | 115.32 | 16.44 | 107,096.08 | 61,667.70 | 9,854.21 | 6,091.58 | .......... | 29,482.59 | 107,096.08 |
| 22nd .... | 28,812.21 | 68,861.50 | 1,469.27 | 50.66 | 6.84 | 99,200.48 | 56,247.46 | 9,238.15 | 5,086.26 | .......... | 28,628.61 | 99,200.48 |
| 23rd .... | 31,832.91 | 76,320.50 | 1,338.55 | 133.73 | 18.16 | 109,643.85 | 62,172.85 | 10,425.32 | 4,753.57 | .......... | 32,292.11 | 109,643.85 |
| 24th .... | 34,921.60 | 92,443.50 | 1,797.79 | 54.20 | 8.75 | 129,225.84 | 68,056.24 | 11,266.31 | 13,457.54 | .......... | 36,445.75 | 129,225.84 |
| 25th .... | 69,603.17 | 181,100.00 | 24,747.85 | 518.10 | 76.83 | 276,045.95 | 159,865.91 | 24,629.14 | 12,309.83 | .......... | 79,241.07 | 276,045.95 |
| 26th .... | 59,652.28 | 145,881.50 | 11,699.52 | 132.15 | 20.42 | 217,385.87 | 124,988.88 | 20,104.80 | 8,071.48 | 39.50 | 64,181.21 | 217,385.87 |
| 27th .... | 19,259.40 | 196,678.00 | 21,959.15 | 210.43 | 23.62 | 238,130.60 | 163,200.10 | 25,141.48 | 19,278.04 | .......... | 30,510.98 | 238,130.60 |
| 28th .... | 10,574.47 | 116,835.00 | 5,660.18 | 145.57 | 13.83 | 133,229.05 | 94,190.12 | 15,228.32 | 6,406.73 | .......... | 17,393.88 | 133,229.05 |
| 29th .... | 1,925.21 | 101,455.15 | 8,035.51 | 199.62 | 33.68 | 111,649.17 | 85,670.81 | 13,642.92 | 10,415.72 | 58.74 | 1,860.98 | 111,649.17 |
| 30th .... | 2,365.18 | 87,753.10 | 3,466.54 | 190.94 | 27.36 | 93,803.12 | 73,693.69 | 11,897.62 | 5,508.20 | 215.50 | 2,488.11 | 93,803.12 |
| 31st .... | 3,669.37 | 137,542.75 | 12,102.66 | 265.71 | 44.29 | 153,624.78 | 122,943.77 | 19,174.02 | 7,885.46 | 21.41 | 3,600.12 | 153,624.78 |
| 32nd .... | 4,805.65 | 128,448.60 | 23,909.90 | 235.98 | 34.70 | 157,434.83 | 119,472.78 | 18,528.67 | 15,839.30 | 71.37 | 3,522.71 | 157,434.83 |
| 33rd .... | 2,183.23 | 105,022.75 | 13,333.03 | 173.80 | 28.48 | 120,741.29 | 92,420.21 | 14,711.10 | 11,368.54 | 25.50 | 2,215.94 | 120,741.29 |
| 34th .... | 12,596.65 | 105,008.70 | 19,213.49 | 112.67 | 15.44 | 136,946.95 | 97,374.55 | 15,353.39 | 6,365.62 | .......... | 17,853.39 | 136,946.95 |
| 35th .... | 9,870.23 | 81,207.25 | 20,804.80 | 126.03 | 18.34 | 112,026.65 | 73,421.08 | 11,009.24 | 9,456.38 | 74.19 | 18,065.76 | 112,026.65 |
| Totals.. | $689,202.21 | $3,365,647.10 | $365,797.88 | $5,453.57 | $770.54 | $4,326,871.30 | $2,835,222.40 | $450,597.27 | $288,430.66 | $562.01 | $752,058.96 | $4,326,871.30 |

## TABLE No. VIII.

## COLLECTIONS DIVISION—ASSESSED RATES SUBDIVISION.
## DETAIL OF GENERAL ASSESSMENT FROM MAY, 1909, TO MAY, 1910.

| Wards | Frontage | Water Closets | Urinals | Baths | Wash Basins | Extra Rooms & Persons | Saloons | Hose, Trough and F't'n | Laundries | Steam H't'g and Engines | Stables | Miscellaneous | Total Assessm't |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st .... | $ 17,203.00 | $ 7,164.00 | $ 612.50 | $ 963.00 | $ 3,848.50 | $ 3,455.50 | $ 559.00 | $ 616.50 | $ 12.00 | $ 1,182.00 | $ 1,332.00 | $ 1,063.00 | $ 38,011.00 |
| 2nd .... | 35,338.50 | 10,459.50 | 293.00 | 3,406.50 | 3,783.00 | 4,414.50 | 336.00 | 2,750.50 | 86.00 | 206.25 | 1,971.00 | 685.50 | 63,729.25 |
| 3rd .... | 40,227.00 | 12,250.50 | 509.00 | 5.834.50 | 3,745.50 | 3,660.50 | 306.00 | 3,493.00 | 57.00 | 280.75 | 1,666.00 | 1,225.00 | 73,254.75 |
| 4th .... | 32,974.00 | 12.651.00 | 385.00 | 1,827.00 | 1,937.50 | 10,296.00 | 459.00 | 298.50 | 9.00 | 617.00 | 1,302.00 | 2,944.50 | 65,700.50 |
| 5th .... | 42,743.00 | 10,086.00 | 520.00 | 2.437.00 | 2.189.50 | 6,472.50 | 597.00 | 660.50 | 27.00 | 382.00 | 1,437.00 | 1,208.25 | 68,759.75 |
| 6th .... | 55,377.50 | 15,269.50 | 380.00 | 11,059.50 | 5,766.50 | 1,602.00 | 33.00 | 9,619.50 | 73.00 | 391.75 | 2,687.00 | 516.00 | 102,775.25 |
| 7th .... | 61,750.50 | 21,552.50 | 812.00 | 15,783.00 | 8,574.50 | 1.740.00 | 225.00 | 9,123.50 | 200.00 | 3,245.50 | 1,871.00 | 763.50 | 125,641.00 |
| 8th .... | 53,355.00 | 11,057.00 | 722.00 | 4.491.50 | 3.558.00 | 6,442.50 | 912.00 | 2,418.00 | 53.00 | 1,032.00 | 1,436.75 | 1,861.30 | 87,339.05 |
| 9th .... | 22,248.00 | 10,671.00 | 436.50 | 756.00 | 2,107.00 | 11,360.00 | 426.00 | 258.00 | 18.00 | 256.00 | 1,761.75 | 783.00 | 51,081.25 |
| 10th ... | 23.764.00 | 14,019.50 | 573.00 | 1.908.00 | 2.676.00 | 16,307.50 | 507.00 | 303.00 | 9.00 | 89.00 | 2,051.00 | 1,056.50 | 63,263.50 |
| 11th ... | 30,634.50 | 16,304.00 | 545.50 | 3,754.00 | 2,812.50 | 15,284.00 | 609.00 | 538.50 | 18.00 | 1,511.00 | 1,949.00 | 1,030.50 | 74,990.50 |
| 12th ... | 59,557.50 | 25,339.50 | 852.50 | 10,234.00 | 5.909.50 | 11,328.00 | 888.00 | 1.789.00 | 60.00 | 495.50 | 1,849.00 | 1,594.25 | 119,896.75 |
| 13th ... | 53,388.00 | 21,819.00 | 492.00 | 14.621.50 | 7,255.00 | 3,151.00 | 372.00 | 4,138.00 | 51.00 | 7.520.00 | 1,568.75 | 830.50 | 115,206.75 |
| 14th ... | 48,137.00 | 17,064.00 | 563.50 | 7,077.00 | 5.095.00 | 5.952.00 | 447.00 | 1,925.50 | 37.00 | 425.00 | 2,487.00 | 813.00 | 90,023.00 |
| 15th ... | 43,035.50 | 23,288.00 | 608.00 | 10,829.00 | 5,747.00 | 9,950.00 | 362.00 | 3,284.00 | 58.00 | 2,477.00 | 1,825.75 | 921.75 | 102,386.00 |
| 16th ... | 32,814.50 | 17,093.00 | 591.00 | 2,217.00 | 2,989.00 | 17,448.00 | 645.00 | 766.00 | 63.00 | 508.00 | 1,667.00 | 1,215.50 | 78,017.00 |
| 17th ... | 34,263.50 | 21,507.00 | 700.50 | 2,368.50 | 4,250.00 | 22,862.00 | 834.00 | 491.00 | 47.00 | 753.50 | 2,473.50 | 1,647.00 | 92,197.50 |
| 18th ... | 26,539.00 | 12,040.00 | 719.00 | 3,013.00 | 5,984.50 | 4.755.00 | 828.00 | 546.00 | 102.00 | 395.00 | 2,095.00 | 1,650.00 | 58,666.50 |
| 19th ... | 31,865.00 | 18,225.50 | 577.00 | 4,341.00 | 4,480.00 | 14,085.00 | 642.00 | 453.00 | 139.00 | 7,455.00 | 2,479.50 | 1,272.00 | 86,014.00 |
| 20th ... | 54,312.00 | 20,143.00 | 526.50 | 10,999.00 | 7.952.50 | 4,488.50 | 387.00 | 3,155.50 | 207.00 | 1,474.50 | 3,306.00 | 1,371.00 | 108,322.50 |
| 21st ... | 36,293.00 | 14,798.00 | 552.00 | 6.131.50 | 6,391.00 | 4.148.00 | 420.00 | 2,826.00 | 33.00 | 1,058.50 | 1,848.00 | 1,314.00 | 75,813.00 |
| 22nd ... | 28,160.00 | 15,744.50 | 573.00 | 2,169.00 | 3,508.00 | 14,046.50 | 633.00 | 388.00 | 38.00 | 329.00 | 1,966.00 | 1,306.50 | 68,861.50 |
| 23rd ... | 34,828.00 | 16,867.50 | 465.50 | 6,125.50 | 4.210.50 | 8.437.50 | 339.00 | 1,980.00 | 104.00 | 634.50 | 1,507.00 | 821.50 | 76,320.50 |
| 24th ... | 40,672.00 | 17,787.50 | 575.50 | 7,284.00 | 4,414.50 | 7,266.00 | 438.00 | 2,295.00 | 43.50 | 9,213.50 | 1,700.00 | 754.00 | 92,443.50 |
| 25th ... | 86,694.00 | 32,798.00 | 611.50 | 23,734.00 | 12.197.50 | 3,716.00 | 333.00 | 15,828.50 | 214.00 | 1,175.00 | 2,577.50 | 1,221.00 | 181,100.00 |
| 26th ... | 77,426.00 | 23,089.50 | 537.00 | 14,869.50 | 7,996.00 | 3,944.00 | 426.00 | 12,988.00 | 129.00 | 606.50 | 2,454.50 | 1,415.50 | 145,881.50 |
| 27th ... | 111,422.00 | 24,905.00 | 789.00 | 14,369.50 | 8,306.50 | 4,705.50 | 705.00 | 18,127.00 | 99.00 | 8,708.50 | 3,036.25 | 1,504.75 | 196,678.00 |
| 28th ... | 58,385.50 | 23,415.00 | 670.50 | 9,844.00 | 6,571.50 | 7,757.50 | 538.00 | 5,555.50 | 21.00 | 823.00 | 2,106.00 | 1,147.50 | 116,835.00 |
| 29th ... | 53,519.00 | 18,301.50 | 892.00 | 3,841.00 | 3,454.50 | 11,163.00 | 1,066.00 | 1,881.00 | 55.00 | 602.40 | 1,849.00 | 4,830.75 | 101,456.15 |
| 30th ... | 44,358.50 | 18,341.00 | 656.00 | 6,187.00 | 4.903.00 | 7,632.00 | 687.00 | 1,385.00 | 94.00 | 658.10 | 1.719.00 | 1,132.50 | 87,753.10 |
| 31st ... | 76,651.00 | 22,484.00 | 746.00 | 13,813.00 | 8,068.00 | 3,686.50 | 378.00 | 7,037.00 | 160.00 | 1,025.50 | 2,518.00 | 975.75 | 137,542.75 |
| 32nd ... | 77,399.00 | 17,171.00 | 694.00 | 10,747.50 | 6,552.00 | 2,062.00 | 288.00 | 9,013.00 | 105.00 | 1,042.25 | 2,026.00 | 1,348.85 | 128,448.60 |
| 33rd ... | 70,087.50 | 12,950.50 | 660.50 | 5,390.00 | 4,082.00 | 2.958.50 | 486.00 | 3,017.00 | 30.00 | 761.50 | 1,626.00 | 2,973.25 | 105,022.75 |
| 34th ... | 59,164.00 | 17,979.50 | 467.00 | 13,272.50 | 6,162.00 | 1,572.00 | 350.00 | 4,039.00 | 60.00 | 153.45 | 1,166.00 | 623.25 | 105,008.70 |
| 35th ... | 52,648.00 | 10,824.50 | 434.50 | 7,195.50 | 3,780.50 | 1,068.00 | 168.00 | 2,956.00 | 27.00 | 894.00 | 891.00 | 320.25 | 81,207.25 |
| Totals, 1909... | $1,707,234.50 | $605,460.50 | $20,742.50 | $262,892.50 | $181,258.50 | $259,217.50 | $17,629.00 | $135,943.50 | $2,538.50 | $58,382.45 | $68,206.25 | $46,141.40 | $3,365,647.10 |
| 1908... | 1,637,574.00 | 550,999.50 | 19,422.00 | 233,392.00 | 160,767.50 | 249,930.50 | 17,526.00 | 108,469.50 | 2,100.50 | 57,404.15 | 65,732.75 | 44,587.40 | 3,147,905.80 |
| 1907... | 1,601,311.50 | 523,235.00 | 18,662.00 | 225,910.50 | 146,687.00 | 242,357.75 | 17,894.50 | 105,054.50 | 2,277.50 | 53,743.20 | 66,522.25 | 41,909.20 | 3,045,564.90 |
| 1906... | 1,568,271.50 | 511,463.50 | 18,767.00 | 223,305.50 | 142,681.00 | 243,342.25 | 19,427.00 | 104,430.00 | 2,828.50 | 43,509.70 | 65,947.75 | 45,046.70 | 2,989,020.40 |

Note—The above table shows an increase in assessed rates revenue of $56,544.50 in 1907 over 1906, an increase of $102,340.90 in 1908 over 1907, and an increase of $217,741.30 in 1909 over 1908, in the total assessment.

## TABLE No. IX.

## COLLECTIONS DIVISION—METER RATES SUBDIVISION.

## ANALYSIS OF GENERAL LEDGER.

| | DEBIT | | | | | CREDIT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Balance Jan. 1st. | Charges | Refunds and Cancelled Certificates | Discount on Refunds | Totals | Collections | Discounts on Collections | Decreases | Suspense No. 2 | Balance Dec. 31st | Totals |
| Totals—1909. | $166,040.40 | $2,455,161.44 | $2,532.11 | $14.20 | $2,623,748.15 | $2,166,224.52 | $172,344.73 | $ 63,678.53 | $ 7.37 | $221,493.00 | $2,623,748.15 |
| Totals—1908. | $282,781.59 | $2,066,129.08 | $2,966.75 | ............ | $2,351,877.42 | $2,020,321.11 | ............ | $165,428.81 | $ 87.10 | $166,040.40 | $2,351,877.42 |
| Totals—1907. | $284,238.86 | $1,979,774.96 | $4,311.23 | ............ | $2,268,325.05 | $1,948,102.90 | ............ | $ 33,285.29 | $4,155.27 | $282,781.59 | $2,268,325.05 |
| Totals—1906. | $224,716.28 | $1,970,186.41 | $2,922.41 | ............ | $2,197,825.10 | $1,873,569.62 | ............ | $ 39,217.12 | $ 809.50 | $284,238.86 | $2,197,825.10 |

Note—The above table shows an increase of collections, amounting to $74,543.28, during 1907 over 1906; an increase of $72,218.21 during 1908 over 1907, and an increase of $145,903.41 during 1909 over 1908.

It will also be noticed that the charges were increased by $9,588.55 during 1907 over 1906, increased by $86,354.12 during 1908 over 1907, and increased by $389,032.36 during 1909 over 1908.

## TABLE No. X.

### COLLECTIONS DIVISION—METER RATES SUBDIVISION.
### NAMES AND SIZES OF WATER METERS IN SERVICE DECEMBER 31st, 1909.

| Name | ⅝″ | ¾″ | 1″ | 1¼″ | 1½″ | 2″ | 3″ | 4″ | 6″ | 8″ | 10″ | 12″ | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worthington Disc | 128 | 1,227 | 2,450 | 572 | 839 | 316 | 47 | 59 | 8 | ..... | ..... | ..... | 5,646 |
| Worthington Plunger | 1,169 | 234 | 746 | 4 | 763 | 760 | 383 | 30 | 8 | ..... | ..... | ..... | 4,097 |
| Worthington Turbine | ..... | ..... | ..... | ..... | ..... | 2 | 14 | 35 | 30 | 7 | 3 | 5 | 96 |
| Keystone Disc | 91 | 318 | 244 | 134 | 254 | 380 | 48 | 71 | 14 | ..... | ..... | ..... | 1,554 |
| Pittsburg Disc | 64 | 128 | 291 | ..... | 256 | 152 | 47 | 20 | 12 | ..... | ..... | ..... | 970 |
| Penn. Disc | 24 | 56 | 35 | ..... | 34 | 58 | ..... | ..... | ..... | ..... | ..... | ..... | 207 |
| Hersey Disc | 31 | 52 | 67 | ..... | 81 | 90 | 62 | 51 | 23 | ..... | ..... | ..... | 457 |
| Hersey Rotary | 4 | 6 | 2 | ..... | 10 | 8 | 6 | 5 | 17 | ..... | ..... | ..... | 58 |
| Hersey Torrent Turbine | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... | 3 | 9 | 1 | 1 | 15 |
| Trident Disc | 393 | 20 | 13 | ..... | 14 | 105 | 77 | 21 | 11 | ..... | ..... | ..... | 654 |
| Crown Rotary | 16 | 73 | 92 | ..... | 96 | 100 | 57 | 94 | 26 | ..... | ..... | ..... | 554 |
| Nash Disc | 29 | 39 | 56 | ..... | 58 | 24 | 5 | 8 | 1 | ..... | ..... | ..... | 220 |
| Empire Oscil. Eccentric | 1 | 4 | 8 | ..... | 3 | 1 | 1 | ..... | ..... | ..... | ..... | ..... | 18 |
| Gem Turbine | ..... | ..... | ..... | ..... | ..... | 8 | 4 | 16 | 21 | 10 | 4 | 1 | 64 |
| Thomson Disc | 21 | 6 | 2 | ..... | 15 | 5 | 2 | 6 | 3 | ..... | ..... | ..... | 60 |
| Niagara Disc | 26 | 70 | 13 | ..... | 18 | 12 | ..... | ..... | ..... | ..... | ..... | ..... | 139 |
| Union Plunger | 9 | 1 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 11 |
| Eureka Turbine | ..... | ..... | ..... | ..... | 3 | 23 | 10 | 3 | 7 | 3 | ..... | ..... | 49 |
| Crest Velocity | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 8 | 1 | 2 | ..... | 13 |
| Standard Velocity | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... | 1 |
| Totals—1909 | 2,006 | 2,234 | 4,020 | 710 | 2,444 | 2,044 | 764 | 421 | 193 | 30 | 10 | 7 | 14,883 |
| Totals—1908 | 2,123 | 2,243 | 4,009 | 701 | 2,412 | 1,904 | 728 | 397 | 174 | 19 | 8 | 3 | 14,724 |

## TABLE No. XI.

## COLLECTIONS DIVISION—METER RATES SUBDIVISION.

### DISTRIBUTION OF WATER METERS IN SERVICE DECEMBER 31, 1909.

| | In Service Jan. 1, 1909 | Set During 1909 | Removed During 1909 | In Service Dec. 31, 1909 |
|---|---|---|---|---|
| Stores and Flats | 2,748 | 178 | 69 | 2,857 |
| Business Houses | 1,591 | 42 | 13 | 1,620 |
| Residence and Apartm't Bldgs | 4,504 | 6 | 108 | 4,402 |
| Railroads | 689 | 7 | 8 | 688 |
| Manufactories | 2,457 | 99 | 38 | 2,518 |
| Breweries | 172 | 4 | 1 | 175 |
| Liveries | 475 | 8 | 4 | 479 |
| Packing Houses | 166 | 10 | 3 | 173 |
| Laundries | 362 | 12 | 4 | 370 |
| Hotels | 321 | 2 | 2 | 321 |
| Office Buildings | 330 | 2 | 4 | 328 |
| Theatres | 51 | 1 | ........ | 52 |
| Charitable Institutions | 126 | ........ | 23 | 103 |
| Miscellaneous | 732 | 111 | 46 | 797 |
| Totals | 14,724 | 482 | 323 | 14,883 |

## TABLE NO. XII.

### COLLECTIONS DIVISION.
### DETAILED STATEMENT OF GROSS CASH COLLECTED BY THE CASHIER OF THE BUREAU OF WATER DURING 1909.

| Months | Assessed Rates | Meter Rates | Meter M'nical | Assess. Misc. | Per-mits | Sus-pense No. 1 | Sus-pense No. 2 | Total | Special Deposits | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| January | $ 344,720.19 | $ 189,258.55 | $ 403.83 | $ 94.70 | $ 1,511.10 | $ 60.00 | ........ | $ 536,048.37 | $ 465.00 | $ 536,513.37 |
| February | 230,434.27 | 155,523.21 | 52.38 | 28.50 | 604.50 | ........ | ........ | 386,642.86 | 1,973.05 | 388,615.91 |
| March | 32,547.13 | 187,446.14 | 141.64 | 69.06 | 1,492.90 | ........ | ........ | 221,696.87 | 34,028.80 | 255,725.67 |
| April | 11,592.86 | 157,337.85 | 177.18 | 1,275.07 | 1,819.80 | ........ | $ .70 | 172,203.46 | 18,801.75 | 191,005.21 |
| May | 228,310.47 | 159,156.52 | 151.82 | 2,283.69 | 2,080.50 | 13.38 | 10.16 | 392,006.54 | 13,290.35 | 405,296.89 |
| June | 516,929.66 | 169,281.41 | 295.46 | 2,088.51 | 2,254.20 | 5.74 | ........ | 690,854.98 | 15,696.35 | 706,551.33 |
| July | 418,030.48 | 178,738.52 | 171.00 | 4,470.07 | 3,125.90 | ........ | ........ | 604,535.97 | 4,695.70 | 609,231.67 |
| August | 271,166.73 | 160,391.11 | 277.72 | 5,439.71 | 2,207.75 | ........ | ........ | 439,483.02 | 8,911.15 | 448,394.17 |
| September | 33,532.53 | 180,389.41 | 131.17 | 5,165.79 | 4,435.40 | ........ | ........ | 223,654.30 | 11,922.25 | 235,576.55 |
| October | 21,926.46 | 221,269.06 | 323.66 | 2,865.06 | 4,701.20 | 3.54 | ........ | 251,088.98 | 9,991.25 | 261,080.23 |
| November | 266,514.78 | 197,540.14 | 207.68 | 4,961.31 | 1,919.50 | ........ | ........ | 471,143.41 | 4,849.55 | 475,992.96 |
| December | 459,516.84 | 209,892.60 | 227.25 | 1,820.09 | 2,821.00 | ........ | ........ | 674,277.78 | 5,878.44 | 680,156.22 |
| Totals—1909 | $2,835,222.40 | $2,166,224.52 | $ 2,560.79 | $30,561.56 | $28,973.75 | $ 82.66 | $ 10.86 | $5,063,636.54 | $130,503.61 | $5,194,140.18 |
| Totals—1908 | $2,644,438.13 | $2,020,321.11 | $ 1,278.71 | $23,284.25 | $26,675.13 | $ 77.24 | $243.48 | $4,716,318.05 | $ 60,094.45 | $4,776,412.50 |
| Totals—1907 | $2,523,663.59 | $1,948,102.90 | $ 1,070.80 | $21,735.07 | $17,786.09 | $259.53 | $ 59.61 | $4,512,677.59 | $ 87,511.83 | $4,600,189.42 |
| Totals—1906 | $2,423,357.35 | $1,873,559.62 | $ 1,352.31 | $26,507.41 | $ 637.00 | $ 41.27 | $ 0.00 | $4,325,454.96 | $107,338.01 | $4,432,792.97 |
| Totals—1905 | $2,383,475.23 | $1,648,626.23 | $14,749.89 | $21,474.45 | $24,064.89 | $109.25 | $ 59.30 | $4,092,559.24 | $ 68,368.91 | $4,160,928.15 |

## TABLE NO. XIII.

## DETAILED STATEMENT OF CASH COLLECTED BY THE CITY COLLECTOR DURING 1909, ON WARRANTS FOR COLLECTION ISSUED BY THE BUREAU OF WATER.

| Months | Contract Collections | Earnings for Water Used in Construction of Cement Walks | Miscellaneous | Total |
|---|---|---|---|---|
| January | $ 250.00 | $ 2,264.19 | | $ 2,514.19 |
| March | | | $ 3.50 | 3.50 |
| April | 250.00 | | | 250.00 |
| August | 250.00 | | | 250.00 |
| October | 250.00 | 4.97 | | 254.97 |
| December | | 1,011.15 | 2.85 | 1,014.00 |
| Totals—1909. | $1,000.00 | $ 3,280.31 | $ 6.35 | $ 4,286.66 |
| Totals—1908. | $ 750.00 | $10,007.01 | | $10,757.01 |
| Totals—1907. | $ 500.00 | $ 7,716.87 | $ 492.89 | $ 8,709.76 |
| Totals—1906. | $1,224.00 | $ 4,822.92 | $ 413.00 | $ 6,459.92 |
| Totals—1905. | | $ 5,602.02 | $10,071.77 | $15,673.79 |

## TABLE NQ. XIV.

## COLLECTIONS DIVISION.

## DETAILED STATEMENT OF REFUNDS MADE DURING THE YEAR 1909.

| Months | Assessed Rates | Meter Rates | Meter Mechanical | Assessor's Miscellaneous | Totals |
|---|---|---|---|---|---|
| January | $ 1,482.82 | $ 104.54 | | | $ 1,587.36 |
| February | 1,612.05 | 137.85 | | | 1,749.90 |
| March | 2,793.84 | 430.20 | $ .85 | | 3,224.89 |
| April | 894.43 | 89.52 | 12.15 | | 996.10 |
| May | 1,047.97 | 130.81 | | | 1,178.78 |
| June | 1,974.66 | 96.18 | | | 2,070.84 |
| July | 803.64 | 16.81 | | $ 6.00 | 826.45 |
| August | 715.98 | 380.74 | | 12.50 | 1,109.22 |
| September | 617.52 | 599.23 | 7.70 | | 1,224.45 |
| October | 1,184.12 | 241.56 | 7.13 | 125.00 | 1,557.81 |
| November | 1,214.35 | 163.00 | | | 1,377.35 |
| December | 1,151.50 | 141.67 | | | 1,293.17 |
| Totals—1909. | $15,492.88 | $2,532.11 | $27.83 | $143.50 | $18,196.32 |
| Totals—1908. | $13,492.95 | $2,966.75 | $21.62 | | $16,481.32 |

Note—Refunds are occasioned by duplicate payments, overpayments, payments on wrong property, erroneous assessments and by Council Orders. Refunds are also made for the unexpired term of an assessment, when property is vacated or put under meter control prior to the expiration of the period for which the assessment has been paid.

## TABLE No. XV.

### COLLECTIONS DIVISION.

### DETAILED STATEMENT OF NET CASH COLLECTED FROM ALL SOURCES DURING 1909, AFTER DEDUCTING REFUNDS AND SPECIAL DEPOSITS.

| Months | Assessed Rates | Meter Rates | Meter Mechanicals | Assessor Misc. | Permits | Suspense No. 1 | Suspense No. 2 | Contract | Earning on Water used for Cement Walks | Miscl. Earnings | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| January | $ 343,237.37 | $ 189,154.01 | $ 403.83 | $ 94.70 | $ 1,511.10 | $ 60.00 | ....... | $ 250.00 | $ 2,264.19 | .......... | $ 536,975.20 |
| February | 228,822.22 | 155,385.36 | 52.38 | 28.50 | 604.50 | ........ | ....... | ......... | .......... | .......... | 384,892.96 |
| March | 29,753.29 | 187,015.94 | 140.79 | 69.06 | 1,492.90 | ........ | ....... | ......... | .......... | $3.50 | 218,475.48 |
| April | 10,698.43 | 157,248.33 | 165.03 | 1,275.07 | 1,819.80 | ........ | $ .70 | 250.00 | .......... | .......... | 171,457.36 |
| May | 227,262.50 | 159,025.71 | 151.82 | 2,283.69 | 2,080.50 | 13.38 | 10.16 | ......... | .......... | .......... | 390,827.76 |
| June | 514,955.00 | 169,185.23 | 295.46 | 2,088.51 | 2,254.20 | 5.74 | ....... | ......... | .......... | .......... | 688,784.14 |
| July | 417,226.84 | 178,721.71 | 171.00 | 4,464.07 | 3,125.90 | ........ | ....... | ......... | .......... | .......... | 603,709.52 |
| August | 270,450.75 | 160,010.37 | 277.72 | 5,427.21 | 2,207.75 | ........ | ....... | 250.00 | .......... | .......... | 438,623.80 |
| September | 32,915.01 | 179,790.18 | 123.47 | 5,165.79 | 4,435.40 | ........ | ....... | ......... | .......... | .......... | 222,429.85 |
| October | 20,742.34 | 221,027.50 | 316.53 | 2,740.06 | 4,701.20 | 3.54 | ....... | 250.00 | 4.97 | .......... | 249,786.14 |
| November | 265,300.43 | 197,377.14 | 207.68 | 4,961.31 | 1,919.50 | ........ | ....... | ......... | .......... | .......... | 469,766.06 |
| December | 458,365.34 | 209,750.93 | 227.25 | 1,830.09 | 2,821.00 | ........ | ....... | ......... | 1,011.15 | 2.85 | 673,998.61 |
| Totals—1909 | $2,819,729.52 | $2,163,692.41 | $ 2,532.96 | $30,418.06 | $28,973.75 | $ 82.66 | $ 10.86 | $1,000.00 | $ 3,280.31 | $ 6.35 | $5,049,726.88 |
| Totals—1908 | $2,630,945.18 | $2,017,354.36 | $ 1,257.09 | $23,284.25 | $26,675.13 | $ 77.24 | $243.48 | $ 750.00 | $10,007.01 | .......... | $4,710,593.74 |
| Totals—1907 | $2,505,649.12 | $1,944,700.49 | $ 1,561.29 | $21,704.57 | $17,786.09 | $259.53 | $ 59.61 | $ 500.00 | $ 7,716.87 | .......... | $4,499,937.57 |
| Totals—1906 | $2,410,418.19 | $1,870,647.31 | $ 2,478.61 | $26,502.91 | $ 413.00 | $ 41.27 | ....... | $1,224.00 | $ 4,827.60 | .......... | $4,316,552.89 |
| Totals—1905 | $2,372,876.23 | $1,646,329.68 | $14,633.23 | $21,455.87 | $24,064.89 | $109.25 | $ 59.30 | ......... | $ 5,602.02 | $13,757.47 | $4,098,887.94 |

## TABLE No. XVI.

### COLLECTIONS DIVISION.

### GROSS RECEIPTS, INCREASE OVER PREVIOUS YEAR, PER CENT OF INCREASE OVER PREVIOUS YEAR, EXPENSES, AND PER CENT OF EXPENSE TO COLLECTIONS, 1907 TO 1909.

| Year | Gross Receipts | Increase Over Previous Year | Per Cent of Increase Over Previous Year | Ordinary Expenses | Per Cent of Expense to Collections |
|---|---|---|---|---|---|
| 1909 | $5,194,140.18 | $417,727.68 | 8.7 | $318,869.83 | 6.1 |
| 1908 | 4,776,412.50 | 176,223.06 | 3.8 | 292,204.01 | 6.1 |
| 1907 | 4,600,189.42 | 167,396.45 | 4.0 | 284,051.83 | 6.1 |

NOTE.—The Expenses for Operation include Salaries, Extra Clerk Hire, Rent, Light, and all other expenses pertaining to the Assessment and Collection of Water Rates.

## TABLE No. XVII.

### COLLECTIONS DIVISION.—CASH COLLECTED BY THE CASHIER OF THE BUREAU OF WATER DURING THE YEAR 1909 AS COMPARED WITH 1908.

| | 1908. | 1909. | Increase | Decrease | Net Increase |
|---|---|---|---|---|---|
| Assessed Rates Collections... | $2,644,438.13 | $2,835,222.40 | $190,784.27 | | |
| Meter Rates Collections...... | 2,020,321.11 | 2,166,224.52 | 145,903.41 | | |
| Meter Mechanical Collections | 1,278.71 | 2,560.79 | 1,282.08 | | |
| Assessor's Miscellaneous Collections.................... | 23,284.25 | 30,561.56 | 7,277.31 | | |
| Permit Collections.......... | 26,675.13 | 28,973.75 | 2,298.62 | | |
| Suspense Account No. 1 Collections.................... | 77.24 | 82.66 | 5.42 | | |
| Suspense Account No. 2 Collections.................... | 243.48 | 10.86 | | $232.62 | |
| Special Deposits.............. | 60,094.45 | 130,503.64 | 70,409.19 | | |
| Totals | $4,776,412.50 | $5,194,140.18 | $417,960.30 | $232.62 | $417,727.68 |

NOTE—Special deposits are not considered a revenue.

## TABLE No. XVIII.

### COLLECTIONS DIVISION.

### COLLECTIONS MADE BY THE U. S. EXPRESS COMPANY DURING 1909.

During the year 1909, the United States Express Company, under a contract with the Department of Public Works, made the following collections:

| | Number of Bills | Amount |
|---|---|---|
| From January 1st to March 1st, 1909...................... | 32,917 | $186,009.01 |
| From March 1st to September 1st, 1909.................... | 66,881 | 371,759.64 |
| From September 1st, 1909, to January 1st, 1910........... | 40,815 | 190,533.39 |
| Totals for 1909.......................................... | 140,613 | $748,302.04 |
| Totals for 1908.......................................... | 132,504 | $674,583.23 |
| Increase, 1909........................................... | 8,109 | $73,718.81 |

Google

## TABLE No. XIX.

## COLLECTIONS DIVISION.

### TOTAL AMOUNTS UNCOLLECTED ON DECEMBER 31ST, DURING THE YEARS 1903, 1904, 1905, 1906, 1907, 1908 AND 1909, IN COMPARISON.

| | 1903 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|---|---|---|
| On Assessed Rates Ledgers | $760,585.86 | $630,638.37 | $649,284.84 | $695,716.24 | $681,155.97 | $689,202.21 | $752,058.96 |
| On Meter Rates Ledgers | 125,006.90 | 165,046.88 | 224,716.28 | 284,238.86 | 282,781.59 | 166,040.40 | 221,493.00 |
| On Meter Mechanical Ledgers | 3,146.00 | 3,236.85 | 1,071.42 | 410.54 | 64.08 | 557.97 | 387.77 |
| In Suspense Account No. 1 | 28,292.33 | 34,994.86 | 38,764.85 | 39,898.16 | 4,291.85 | 3,165.77 | 2,749.75 |
| In Suspense Account No. 2 | 18,664.75 | 19,144.50 | 19,775.70 | 20,585.20 | 12,828.03 | 1,707.28 | 1,401.98 |
| Totals | $935,695.84 | $852,461.46 | $933,613.09 | $1,040,849.00 | $981,121.52 | $860,673.63 | $978,091.46 |

NOTE.—As the Frontage Rates are assessed annually on the first day of May, the uncollected balances appear larger on December 31st than on April 30th. (See Table No. XX.)

## TABLE No. XX.

## COLLECTIONS DIVISION.

### TOTAL AMOUNTS UNCOLLECTED ON APRIL 30TH DURING THE YEARS 1903, 1904, 1905, 1906, 1907, 1908 AND 1909, IN COMPARISON.

| | 1903 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|---|---|---|
| On Assessed Rates Ledgers | $ 233,515.84 | $ 129,221.32 | $ 89,755.96 | $ 48,974.95 | $ 43,127.11 | $ 32,886.76 | $ 10,924.12 |
| On Meter Rates Ledgers | 178,972.61 | 224,943.47 | 212,819.93 | 232,539.66 | 266,682.13 | 198,412.36 | 175,008.32 |
| On Meter Mechanical Ledgers | 2,476.93 | 4,290.56 | 4,357.47 | 528.59 | 249.02 | 686.52 | 438.14 |
| In Suspense Account No. 1 | | 31,306.02 | 36,030.36 | 39,473.08 | 39,909.79 | 4,005.73 | 3 114.01 |
| In Suspense Account No. 2 | | 18,707.33 | 19,540.50 | 20,585.20 | 23,356.53 | 1,765.12 | 1,478.92 |
| Totals | $ 414,965.38 | $ 408,467.70 | $ 362,504.22 | $ 312,101.48 | $ 373,324.58 | $ 237,756.49 | $ 190,963.51 |

## TABLE No. XXI.

### METER MECHANICAL DIVISION.

### METERS INSTALLED AND REMOVED—REPAIR WORK PERFORMED DURING 1909.

| | | |
|---|---|---|
| Water Meters in service January 1, 1909 | | 14,724 |
| Water Meters installed during the year 1909 | 492 | |
| Less Meters replaced on increased service | 10 | 482 |
| Total | | 15,206 |
| Water Meters permanently removed during 1909 | | 323 |
| Total Water Meters in service December 31, 1909 | | 14,883 |

### REPAIRS, ETC.

| | |
|---|---|
| Meters reconstructed in shop | 3,354 |
| Meters repaired on premises | 8,168 |
| Meters inspected and controlled | 1,069 |
| Meters tested | 6,024 |
| Counters repaired | 4,399 |
| Iron connections installed | 112 |
| Connections wiped | 262 |
| Leaks repaired | 146 |
| Locations of meters changed | 156 |
| Premises controlled | 34 |
| Double boxes constructed | 202 |
| Double boxes set | 183 |
| Double boxes repaired | 499 |
| Single boxes constructed | 34 |
| Single boxes set | 51 |
| Brick basins repaired | 260 |
| Cement floors repaired | 57 |
| Cement walks repaired | 53 |
| Cement basins built | 14 |
| Plumbers' investigations | 635 |
| General investigations | 847 |

## TABLE No. XXII.

### METER MECHANICAL DIVISION—COST OF OPERATION.

### DEBIT.

| | | | |
|---|---|---|---|
| Uncollected Balance, January 1, 1909 | | $ 557.97 | |
| Purchase of Meter Merchandise | | 13,012.80 | |
| Salaries of | | | |
| General Foreman | $ 1,634.40 | | |
| Assistant General Foreman | 2,040.16 | | |
| Clerk, acting as Chief Clerk | 896.30 | | |
| Clerks | 4,291.20 | | |
| Stenographer (6 months, 26 days) | 373.04 | | |
| Meter Setter as Storekeeper | 1,052.87 | | |
| Meter Setters | 21,517.82 | | |
| Plumbers | 2,354.74 | | |
| Carpenter | 1,013.82 | | |
| Cement Finisher | 1,012.09 | | |
| Cement Finisher's Helper | 683.76 | | |
| Tinsmith | 1,239.75 | | |
| Expert Meter Tester | 1,189.15 | | |
| Machinists | 3,508.21 | | |
| Laborers | 15,999.04 | | |
| Teams | 959.18 | | |
| Expressmen | 16,971.69 | | |
| | | 76,737.22 | |
| | | | $ 90,307.99 |

### CREDIT.

| | | |
|---|---|---|
| Net Cash Received for Material and Labor, in repairing Meters | $ 2,532.96 | |
| Earning on account of sale of iron cover, on warrant for collection | 2.85 | |
| Amount due and uncollected December 31, 1909 | 387.77 | |
| | | 2,923.58 |
| Net Cost of Operation, 1909 | | $ 87.384.41 |
| Net Cost of Operation, 1908 | | $ 78,108.32 |

NOTE—The present city ordinance requires the setting and repairing of meters to be done at the expense of the city, which cuts off the revenue formerly derived from this division

## TABLE No. XXIII.

### IN GENERAL — INCOME ACCOUNT.

### REVENUE.

| | | | |
|---|---|---|---|
| From Assessed Rates: | | | |
| General Assessment, May 1st, 1909 | $3,365,647.10 | | |
| Increase to Back Tax | 11,988.24 | | |
| Increase to Current Tax | 253,809.64 | $3,631,444.98 | |
| Less— | | | |
| Discount allowed for prompt payment | $ 449,826.73 | | |
| Erroneous assessments refunded | 10,039.31 | | |
| Decreases on account of municipal, charitable, educational and religious institutions, in accordance with Section 2404, Revised Municipal Code | 202,316.58 | | |
| Decreases on account of overpayments, removed buildings, drawbacks on amounts previously paid on vacant property, change to meter control and other causes | 86,114.08 | | |
| Decreases on Suspense Account No. 1 | 895.37 | 749,192.07 | |
| Net revenue from Assessed Rates | | | $2,882,252.91 |
| From Meter Rates: | | | |
| Meter charges, as per rate takers' reports | | $2,455,161.44 | |
| Less— | | | |
| Discount allowed for prompt payment | $172,330.53 | | |
| Decreases on account of municipal, charitable, educational and religious institutions, in accordance with Section 2402, Revised Municipal Code | 39,286.01 | | |
| Decreases on account of adjustment of claims and other causes. | 24,392.52 | | |
| Decreases on Suspense Account No. 2 | 301.81 | $236,310.87 | |
| Net revenue from Meter Rates | | | 2,218,850.57 |
| From Assessor's Division: | | | |
| Miscellaneous charges for sprinkling wagons, cement walks, etc. | | | 33,701.87 |
| From Permits and Contracts: | | | 29,973.75 |
| Total Net Revenue | | | $5,164,779.10 |
| Less—Cost of operation of Meter Mechanical Division. (See Table No. XXII) | | | 87,384.41 |
| Total Net Revenue | | | $5,077,394.69 |

### TABLE No. XXIII—Continued.

| | | |
|---|---|---|
| Total Net Revenue (brought forward) | | $4,666,531.17 |
| EXPENSES. | | |
| Superintendent's Office, Salaries | $21,564.52 | |
| Collection Division, General Salaries | 7,810.00 | |
| Assessed Rates Subdivision, Salaries | 58,913.00 | |
| Meter Rates Subdivision, Salaries | 55,272.75 | |
| Assessor's Division, General, Salaries | 17,166.67 | |
| Inspection Subdivision, Salaries | 59,691.99 | |
| Shut-off Subdivision, Salaries | 28,997.43 | |
| Permit and Map Subdivision, Salaries | 8,880.00 | |
| Overtime and Extra Clerk Hire | 11,986.86 | |
| Postage | 14,000,00 | |
| Sundry Expenses | 14,870.23 | |
| Transportation | 2,716.45 | |
| Rent | 16,999.93 | 318,869.83 |
| Net Income Bureau of Water | | $4,758,524.86 |

### TABLE No. XXIV.

### BALANCE SHEET.

| | | | |
|---|---|---|---|
| DEBIT. | | | |
| Balance uncollected January 1st, 1909 | | $ 860,673.63 | |
| Disbursements during the year 1909:— | | | |
| Salaries | $ 347,020.44 | | |
| Postage | 14,000.00 | | |
| Sundry Expenses | 14,870.23 | | |
| Transportation | 2,716.45 | | |
| Rent | 16,999.93 | | |
| Meter Merchandise | 13,012.80 | | |
| Total disbursements | | $ 408,619.85 | |
| Net income, 1909, as per income account (See Table No. XXIII) | | 4,758,524.86 | |
| | | | $6,027,818.34 |
| CREDIT. | | | |
| Debit balance against City Comptroller December 31, 1909, as follows:— | | | |
| Net collections made by Bureau of Water | $5,045,440.22 | | |
| Amounts collected on warrants for collection:— | | | |
| For water used in constructing cement walks | 3,280.31 | | |
| On account of contract by this Bureau | 1,000.00 | | |
| For earning on account of Tap Permit | 3.50 | | |
| For earning on account of sale of iron cover | 2.85 | | |
| Total net collections | | $5,049,726.88 | |
| Balance uncollected, December 31st, 1909, as follows: | | | |
| Assessed rates | $752,058.96 | | |
| Meter rates | 221,493.00 | | |
| Meter mechanical | 387.77 | | |
| Suspense account No. 1 | 2,749.75 | | |
| Suspense account No. 2 | 1,401.98 | | |
| Total uncollected balance | | 978,091.46 | |
| | | | $6,027,818.34 |

CHICAGO, April 19, 1910.

I hereby certify that the figures contained in the statement above the signature of Supt. W. J. McCourt, and the foregoing tables, computed from the records of the Bureau of Water, are correct.

M. C. SCHIFF,
Chief Accountant.

Respectfully submitted,

WM. J. McCOURT,
Superintendent of Water.

M. J. DOHERTY

ANNUAL REPORT

# BUREAU OF STREETS

CITY OF CHICAGO

1909

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P. McCARTHY
ASS'T SUPERINTENDENT

# BUREAU OF STREETS

CHICAGO, December 31, 1909.

MR. JOHN J. HANBERG,

Commissioner of Public Works:

DEAR SIR:—I have the honor to submit the thirty-fourth annual report of the Bureau of Streets for the year ending December 31, 1909.

The work of collection and removal of garbage; street and alley cleaning; supervision of public utility work, and removal of obstructions from public thoroughfares has been done in a most satisfactory manner, and the comparatively few complaints received have been investigated, and in the great majority of cases found to be either absolutely groundless, or due to some irregularity on the part of the householder.

## GARBAGE.

From January 1st to December 31st, inclusive, 93,267¾ tons of pure garbage were collected and delivered to the Chicago Reduction Company's plant at 39th and Iron streets. The cost of collection and delivery amounted to $364,996.14.

For final disposition of garbage after delivery to the plant, the Chicago Reduction Company received $47,500.00, as per contract.

3,000 tons more of pure garbage were collected and delivered to the reduction plant than in 1908, and at a less expense, the saving being $8,181.58.

## ASHES AND RUBBISH.

1,234,192 cubic yards or 248,251 loads of ashes and rubbish were collected and hauled during 1909, at a cost of $704,104.75. Of this output about 275,000 cubic yards were dumped in unimproved streets and alleys below grade and in sidewalk spaces, and the balance was taken to clay holes in isolated districts.

## STREET CLEANING.

In the annual report for 1908 attention was called to an important item in connection with street cleaning, i. e. the purchase of forty flushing machines from the Sanitary Street Flushing Machine Company of St. Louis. It was decided that the most effective work with flushers could be done at night, for the reason that traffic was at a minimum then. During the summer it was noticed that the use of flushers at night had a decided tendency to cool the atmosphere. This was especially appreciated in the more congested wards and many letters were received commending the Bureau for its efforts in this direction. It is to be hoped that sufficient provision will be made in the appropriation for 1910 to continue and to increase the use of flushing machines.

67,066 miles of streets and alleys were cleaned, necessitating the removal of 203,769 loads, or 815,703 cubic yards of street dirt.

3,885,298 square yards of weeds were cut, and 1,603,901 inlets to catch basins were opened and cleaned.

The cost of this work was $822,298.98. Included in this amount is $136,450.67 charged for cleaning the rights of way of traction companies. $34,352.25 of the amount charged against the traction companies was refunded to the First Ward appropriation, and the balance, $102,098.42, was turned into the General Fund.

35,307 loads or 139,141 cubic yards of snow were removed at a cost of $50,000.00.

### DEAD ANIMALS REMOVED.

| | |
|---|---|
| Horses | 4,952 |
| Cows | 127 |
| Goats | 210 |
| Dogs and cats | 31,570 |
| Sheep | 10 |
| Total | 36,869 |

These dead animals were removed by the Canal Melting Company without expense to the City of Chicago.

### REPAIRING IMPROVED STREETS AND ALLEYS—CHARGED TO WARD APPROPRIATION.

2,247 square yards new cedar.
727 square yards old cedar.
6,865 square yards granite.
860 square yards brick.
464 square feet cross walk.

together with the following material:

256 cubic yards gravel.
3,940 cubic yards crushed stone.
20,305 cubic yards cinders and spawls.
24½ barrels tar.
66 bags cement.
26,702 feet new lumber.

at an expense of $29,991.92.

### REPAIRING UNIMPROVED STREETS—WARD APPROPRIATIONS.

Grading........150,175 lineal feet.
Ditching........168,616 lineal feet.
295 new and repaired aprons.
1,100 new and repaired crossings.
218 new and repaired culverts.
22 drain boxes.
1,331 general repairs.
New Lumber...165,240 feet.
Old Lumber... 32,986 feet.
Kegs nails..... 40
Cu. yds. cinders. 38,781
Expense ..........................$23,637.49

### SIDEWALK REPAIRS—WARD APPROPRIATIONS.

619 new and repaired intersections.
2,352 general repairs.
110,626 feet of new lumber.
129,449 feet of old lumber.
45 kegs of nails.
2,670 cubic yards cinders.
Expense ............. ...........$6,869.01

### VEHICLE TAX.

During the year 1909 about $500,000.00 was expended for the repair of improved and unimproved streets. The work was done by departmental labor and by contract.

The following itemized statement shows the amount of money expended in each ward on the various classes of pavements. It also shows the amount expended under the supervision of the ward superintendents and the amount expended by contract.

### SOUTH APPROACH TO HALSTED STREET BRIDGE OVER SOUTH BRANCH OF CHICAGO RIVER FROM THE SOUTH END OF THE BRIDGE TO THE NORTH RAIL OF NORTH SWITCH TRACK OF THE C. & A. R. R.

One of the most essential and necessary repairs made out of the wheel tax fund for the year 1909 was the tearing out of the old macadam south approach to the Halsted street bridge from the South Branch of the Chicago river from the south end of the approach to the north rail of the switch track of the C. & A. Railroad. No. 2 granite block was placed on a 6-inch concrete foundation, and has done away with a good deal of complaint.

### IROQUOIS PAVING COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 138 sq. yds. No. 2 granite on plank foundation....... | @ $14.75 | $2,035.50 |
| 594 sq. yds. No. 2 granite on concrete foundation.... | @ 3.55 | 2,108.75 |
| 1 new C. B. .......................................... | @ 45.00 | 45.00 |
| Total amount of contract ............................. | | $4,189.20 |

### SUBWAYS.

The ordinances for track elevation work call for the paving of the subways with brick. These subways have been a source of complaint from the first year that they were built. On some of the heavy traffic streets the bricks have ravelled and disintegrated, and it would be a waste of money to repair these with brick, and these are rapidly being replaced with No. 2 granite, which is the proper pavement for these subways.

The following subways were repaved with granite:

### THIRTY-FIRST AND FORTY-THIRD STREET SUBWAYS UNDER C. R. I. & P. AND L. S. & M. S. RYS.

ALEXANDER N. TODD, CONTRACTOR.

| | | | |
|---|---|---|---|
| 2140.5 | sq. yds. No. 2 granite | @ $ 2.82 | $6,036.20 |
| 910 | sq. ft. cement walk | @ .20 | 182.00 |
| 118 | lin. ft. curb (limestone) | @ .55 | 64.90 |
| 2 | new C. B. covers | @ 10.00 | 20.00 |
| 6 | feet 9 inch pipe | @ .75 | 4.50 |
| 8 | C. B. adj. | @ 20.00 | 160.00 |
| | Total | | $6,487.60 |

### ASHLAND AVENUE SUBWAY UNDER C. & A. R. R.

CITIZENS' CONSTRUCTION COMPANY, CONTRACTOR.

| | | | |
|---|---|---|---|
| 278 | sq. yds. No. 2 granite pavement | @ $ 2.85 | $ 792.30 |

### THIRTY-SIXTH STREET—ALSO ROOT STREET UNDER L. S. & M. S. AND C. R. I. & P. R. R.

MARQUETTE CONSTRUCTION COMPANY, CONTRACTOR.

| | | | |
|---|---|---|---|
| 582 | sq. yds. granite pavement | @ $ 2.98 | $1,734.36 |
| 1330 | sq. yds. sidewalk | @ .17 | 226.10 |
| 112 | lin. ft. curb | @ .90 | 100.80 |
| | | | $2,061.26 |

### FIFTY-FIFTH STREET SUBWAY—APPROACHES I. C. R. R.

CITIZENS' CONSTRUCTION COMPANY, CONTRACTOR.

| | | | |
|---|---|---|---|
| 1186.5 | sq. yds. No. 2 granite | @ $ 3.00 | $3,559.50 |
| 142.4 | lin. ft. gutter | @ .45 | 64.08 |
| | | | $3,623.58 |

### SIXTY-THIRD STREET FROM W. RIGHT-OF-WAY OF I. C. R. R. TO A POINT 70 FEET W. OF THE W. LINE OF WASHINGTON AVENUE.

CITIZENS' CONSTRUCTION COMPANY, CONTRACTOR.

| | | | |
|---|---|---|---|
| 852 | sq. yds. No. 2 granite pavement | @ $ 3.00 | $2,556.00 |
| 50 | lin. ft. gutters | @ .45 | 22.50 |
| | | | $2,578.50 |

The following brick subways were repaired with brick, and some of these in a few years will have to be replaced with granite block.

## DIVISION, BRADLEY, BLACKHAWK, CLYBOURN, NOBLE, ARMITAGE, WOOD, UNDER C. & N. W. R. R.

ALEXANDER N. TODD, CONTRACTOR.

| | | |
|---|---|---|
| 49,159 sq. yds. brick repairs | @ $ 1.70 | $8,357.03 |
| 1,030 sq. yds. concrete (specified) | @ .75 | 772.50 |
| 430 lin. ft. curb | @ .60 | 258.00 |
| 4,766 sq. ft. sidewalk | @ .18 | 857.88 |
| 2 new iron covers | @ 10.00 | 20.00 |
| | | $10,265.41 |

## 23RD STREET, 24TH STREET, 25TH STREET, 27TH STREET, 29TH STREET, 30TH STREET, 32ND STREET, 33RD STREET, 35TH STREET SUBWAYS UNDER C. R. I. & P. AND L. S. & M. S. R. R.

ALEXANDER N. TODD, CONTRACTOR.

| | | |
|---|---|---|
| 3,346 sq. yds. brick repairs | @ $ .90 | $3,011.40 |
| 1,032 sq. yds. concrete foundation | @ 75 | 774.00 |
| 1,511 lin. ft. concrete curb | @ .55 | 831.05 |
| 3,263 sq. ft. cement sidewalk | @ .14 | 456.82 |
| | | $5,073.27 |

## INTERSECTIONS.

There is a good deal of inconvenience and danger to traffic on account of unpaved intersections connecting paved streets. The wheel tax fund seemed to be appropriately fitted for this kind of work, as it would be impossible for the Board of Local Improvements to pave these intersections by special assessments after the intersecting streets have been paved.

During the year the following intersections have been paved:

## INTERSECTION OF BLUE ISLAND AVENUE AND 15TH STREET, ALSO 15TH STREET FROM BLUE ISLAND AVENUE TO THE EAST LINE OF FIRST ALLEY EAST.

JAMES A. SACKLEY COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 913 sq. yds. granite pavement | @ $ 3.37 | $3,076.81 |
| New Catch Basin | | 45.00 |
| | | $3,121.81 |

## INTERSECTION AT PAULINA AND 16TH STREETS, ALSO ON PAULINA STREET FROM SOUTH LINE OF 15TH STREET TO TOP OF SUBWAY APPROACH.

UNION PAVING COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 1 M. H. adj. | | $ 5.00 |
| 2 new C. B. covers | @ $10.00 | 20.00 |
| 4 C. B. adj. | @ 20.00 | 80.00 |
| 628 sq. yds. brick pavement | @ 1.60 | 1,004.80 |
| 176 lin. ft. curb and gutter | @ .60 | 105.60 |
| | | $1,215.40 |

## SHERIDAN ROAD.

### FOSTER AVENUE TO ARDMORE AVENUE.

One of the principal thoroughfares, especially for automobile and pleasure traffic, is Sheridan Road. Sheridan Road, with the exception of the district bounded by Foster avenue and Devon avenue, is under the jurisdiction of the Lincoln Park Board. The part under the Lincoln Park Board control is kept in first class condition. The part under the City's jurisdiction, namely, from Foster to Devon avenues, is almost impassable, and a contract was entered into for repairing this macadam street from Foster to Ardmore avenues. The old surface was scarified to a depth of 4 inches and reshaped, and 2 gallons of liquid asphalt put in as a binder. This work was done at a small cost, and is giving very satisfactory results. Next year the balance of the work should be completed from Ardmore avenue to Devon avenue.

JOHN A. MCGARRY & COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 23,358 sq. yds. macadam | @ $ .28½ | $6,657.03 |

## DIVISION STREET APPROACH FROM W. RAIL OF R. R. TRACK AT INTERSECTION OF HALSTED STREET TO E. END OF BRIDGE OVER N. BRANCH OF CHICAGO RIVER—DISTANCE ABOUT 270 FEET.

The east approach to the Division street bridge was paved with an old cedar block pavement, which was in a dangerous condition for the heavy traffic that is compelled to use this bridge daily. This approach was repaved with No. 2 granite on an 8-inch macadam foundation.

ALEXANDER N. TODD, CONTRACTOR.

| | | |
|---|---|---|
| 681 sq. yds. granite pavement | @ $ 2.89 | $1,968.09 |
| 2 C. B. covers | @ 20.00 | 40.00 |
| | | $2,008.09 |

## EAST SIDE OF CLARK STREET FROM ADAMS STREET TO JACKSON BOULEVARD.

CITIZENS' CONSTRUCTION COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 718 sq. yds. creosote | @ $ 3.16 | $2,268.88 |
| 2 C. B. adj. | @ 20.00 | 40.00 |
| | | $2,308.88 |

## RIVER STREET APPROACH LEADING TO THE RUSH STREET BRIDGE.

This bridge approach has been the source of complaint for a number of years, and we have made temporary repairs that relieve the conditions only temporarily. The earth subgrade kept constantly seeping through the broken retaining wall into the river, and allowing the pavement to sink. In order to protect the roadway it was necessary to build a new retaining wall, and on account of the lateness of the season we were unable to complete a new pavement, and this should be done the first thing the new year.

NATIONAL CONSTRUCTION COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 36,878 ft. B. M. oak timber | @ $80.00 | $2,950.24 |
| 4,947 ft. B. M. pine timber | @ 70.00 | 346.29 |
| 1,395 lin. ft. oak piles delivered | @ .20 | 279.00 |
| 1,395 lin. ft. oak piles delivered | @ .25 | 348.75 |
| 10,059 lbs. structural steel | @ .05 lb. | 502.95 |
| 2,659 steel reinforcing bars | @ .04 lb. | 106.36 |
| 111 cubic yds. blue clay filling | @ 1.50 | 166.50 |
| 262 cubic yds. concrete | @ 15.00 | 3,930.00 |
| 57 lin. ft. gas pipe railing | @ 3.00 | 171.00 |
| 70 sq. yds. pavement with granite taken from present pavement | @ 3.50 | 245.00 |
| Total | | $9,046.09 |

## OILING.

The greatest step forward taken in years by the Bureau of Streets for the promotion of the comfort of the general public was the experiment made in the oiling of macadam roadways. There are more paved miles of macadam than any other class of pavement and macadam pavements require more attention than any other kind. At the end of ten years it is the most expensive pavement that can be put down. In dry weather the streets, unless sprinkled frequently, are dusty and cause a good deal of annoyance, not only to those using them, but to property along the streets. The use of oil obviates this disagreeable condition. The most satisfactory results were obtained with a road oil emulsion consisting of 25 lbs. of linseed soap, 100 gallons of oil, and 400 gallons of water, the cost of one application averaging about .005 per square yard. At the present time only four of the wards are equipped to emulsify this road emulsion, consequently only a small amount of the necessary oiling was done. It has given such satisfactory results where it has been used that it would be advisable to install five or six additional plants, preferably portable plants, in the balance of the wards with a heavy macadam mileage, and I would recommend that this be done next year.

## ASPHALT REPAIRS.

During 1909 there were 80,000 square yards of asphalt resurfacing laid, and 1,540 tons of binder, at a total cost of $66,969.61.

### THE FOLLOWING WORK WAS DONE BY CONTRACT.

### FULTON STREET.

FROM FOOT OF APPROACH OF SUBWAY UNDER PENN. R. R. TO TOP OF EAST APPROACH.

The old cedar block approach on FULTON STREET was torn out and paved with an 8-inch macadam foundation and No. 2 granite block. The addition of this work has made an A No. 1 subway out of a dangerous subway.

CITIZENS' CONSTRUCTION CO., CONTRACTOR.

| | | |
|---|---|---|
| 674 sq. yds. No. 2 granite | @ $ 3.05 | $2,055.70 |
| 1 M. H. adj. | @ 5.00 | 5.00 |
| | | $2,060.70 |

### WESTERN AVENUE.

FROM NINETY-FIFTH STREET TO ONE HUNDRED AND SEVENTH STREET.

Country roads had to be built to accommodate the automobile, funeral and farm traffic, and the addition of WESTERN AVENUE from 95th street to 107th street has made a connecting link with many small suburban towns in that section. Macadam roadways as built heretofore have not stood the heavy automobile traffic, and it was necessary to build our country roads along more modern lines. With this in view instead of the old type we have built a road consisting of 8-inch slag foundation, bonded with screenings and rolled, and a 4-inch course of macadam, bonded with a liquid binder and covered with screenings. These roads seem to meet the wants of the present conditions, and the cost has not been materially increased.

JOHN ZEDER, CONTRACTOR.

| | | |
|---|---|---|
| 16,099 sq. yds. macadam | @ $ .87 | $14,006.13 |

FIFTY-FIRST AVENUE from Ainslie avenue to Catalpa avenue; FOREST GLEN AVENUE from Catalpa avenue to North 48th avenue; HIGGINS AVENUE from 56th avenue to City Limits.

This country road was built along the same lines as Western avenue, and was put down to complete the chain of macadam roads in the northwest section of the city. In building this road we have used five different liquid binders, and the one that turns out to be the most satisfactory will be given a large preference in future work.

JOHN A. MC GARRY & COMPANY, CONTRACTOR.

| | | |
|---|---|---|
| 19,974 sq. yds. macadam | @ $ .96 | $19,175.04 |

## GRANVILLE AVENUE.

| | |
|---|---|
| Retaining wall at stub end of Granville avenue | $ 230.34 |

THE FOLLOWING MATERIAL WAS BOUGHT BY CONTRACT.

| | | |
|---|---|---|
| No. 2 granite | 6,000 yds. | $11,437.97 |
| No. 2 granite | 2,000 yds. | 4,664.92 |
| Pine Lumber | | 14,004.00 |
| Cedar Block | | 1,863.00 |
| | | $31,789.89 |

The amount of repairs and the material used by the ward superintendents is shown by the following table:

21,937 sq. yds. new cedar.
5,142 sq. yds. old cedar.
65,652 sq. yds. granite.
13,748 sq. yds. brick.
4,674 sq. ft. cross walks.
681,765 ft. grading.
210,524 ft. ditching.

MATERIALS USED.

2,308 cu. yds. gravel.
48,572 cu. yds. crushed stone.
73,083 cu. yds. cinders and spawls.
2,227 cu. yds. slag.
61½ barrels tar.
5,213 gallons tar.
799 bags cement.
65,080 gallons oil.
15,090 pounds soap.
35½ kegs of nails.
281 new and repaired aprons.
526 new and repaired crossings.
127 new and repaired culverts.
11 new and repaired drain boxes.
112 general repairs.
233,130 ft. new lumber.
59,940 ft. old lumber.
Expense ....................$251,952.54

## PERMIT DIVISION.

### NUMBER OF PERMITS ISSUED DURING YEAR ENDING December 31st, 1909.

| | |
|---|---|
| To build manure vaults | 55 |
| To open improved streets for sewer and water | 2,084 |
| To open unimproved streets for sewer and water | 5,214 |
| To open streets, City departments | 3,039 |
| To open streets, Commonwealth Edison Company | 876 |
| To open streets, Chicago Telephone Company | 214 |
| To open streets, People's Gas Light & Coke Company | 17,008 |
| To open streets, various corporations | 48 |
| For use of street | 1,174 |
| Chicago City Railway Company | 157 |
| Chicago Railways Company | 262 |
| Calumet & South Chicago Railway Company | 129 |
| For inspection | 66 |
| Miscellaneous | 2,646 |
| Total | 32,972 |

### REPAIRS MADE BY THE CHICAGO TELEPHONE COMPANY DURING 1909.

| | |
|---|---|
| Asphalt | 1,216 sq. yds. |
| Macadam | 3,195 sq. yds. |
| Brick | 1,139 sq. yds. |
| Granite | 484 sq. yds. |
| Cedar | 2,089 sq. yds. |
| Concrete | 30 sq. yds. |
| Total | 8,153 sq. yds. |

### REPAIRS MADE BY THE COMMONWEALTH EDISON COMPANY DURING 1909.

| | |
|---|---|
| Asphalt | 11,532 sq. yds. |
| Granite | 5,049 sq. yds. |
| Brick | 7,165 sq. yds. |
| Macadam | 3,922 sq. yds. |
| Creosoted block | 36 sq. yds. |
| Cedar block | 4,212 sq. yds. |
| Total | 31,916 sq. yds. |

### REPAIRS MADE BY THE PEOPLES GAS LIGHT & COKE COMPANY DURING 1909.

| | |
|---|---|
| Asphalt | 18,310.11 sq. yds. |
| Granite | 14,813.30 sq. yds. |
| Brick | 13,101.97 sq. yds. |
| Macadam | 56,247.42 sq. yds. |
| Creosoted block | 312.09 sq. yds. |
| Cedar block | 18,818.67 sq. yds. |

## SUMMARY OF HOUSE MOVING, 1909.

| MONTH | No. Permits | DIMENSIONS | | | | DESCRIPTION | | DIVISION | | | PERMIT FEES | | AMOUNT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Stories High | | | Front Width | | | | | | | | | |
| | | One | Two | Three | | Frame | Brick | North | South | West | One Dollar | Five Dollars | | |
| January | 34 | 15 | 18 | 1 | 699 | 31 | 3 | 10 | 16 | 8 | 14 | 20 | $114.00 | |
| February | 40 | 19 | 20 | 1 | 840 | 32 | 8 | 3 | 14 | 23 | 27 | 13 | 92.00 | |
| March | 73 | 32 | 38 | 3 | 1,572 | 64 | 9 | 7 | 34 | 32 | 45 | 28 | 185.00 | |
| April | 73 | 37 | 36 | ...... | 1,556 | 64 | 9 | 6 | 39 | 28 | 42 | 31 | 197.00 | |
| May | 71 | 36 | 33 | 2 | 1,451 | 61 | 10 | 13 | 29 | 29 | 42 | 29 | 187.00 | |
| June | 56 | 34 | 22 | ...... | 1,116 | 51 | 5 | 6 | 24 | 26 | 43 | 13 | 108.00 | |
| July | 67 | 37 | 27 | 3 | 1,377 | 50 | 17 | 8 | 19 | 40 | 38 | 29 | 183.00 | |
| August | 53 | 22 | 30 | ...... | 1,086 | 44 | 8 | 3 | 24 | 26 | 29 | 24 | 149.00 | One Iron Shaft. |
| September | 59 | 24 | 34 | 1 | 1,293 | 54 | 5 | 5 | 29 | 25 | 31 | 28 | 171.00 | |
| October | 66 | 37 | 27 | 2 | 1,308 | 57 | 9 | 7 | 31 | 28 | 35 | 30 | 185.00 | J 5304, no fee; Council order. |
| November | 53 | 26 | 25 | 2 | 1,143 | 40 | 13 | 1 | 28 | 24 | 32 | 21 | 137.00 | |
| December | 27 | 19 | 8 | ...... | 516 | 24 | 3 | ....... | 18 | 9 | 11 | 16 | 91.00 | |
| | | 338 | 318 | 15 | | 572 | 99 | 69 | 305 | 298 | 380 | 282 | | |
| Total | 672 | 671 | | | 14,047 | 671 | | 672 | | | 671 | | $1,799.00 | |

In conclusion, I wish to state that this Bureau and the City of Chicago sustained a great loss in the death of its honorable and efficient head, Mr. M. J. Doherty. Mr. Doherty had been Superintendent of the Bureau for eleven years. He had a thorough knowledge of street conditions and his judgment in such matters was invariably relied on. The affairs of the office were handled with the greatest tact, ability and force. Few public servants in Chicago's history were better loved and more widely respected. He was born February 3, 1866, in Brooklyn, N. Y., and died October 22, 1909. His was a life crowded with good deeds. The employes of the Street Bureau and the City at large mourn because his distinguished career was cut so short. Chicago has lost much in the death of this public servant.

Respectfully submitted,

P. McCARTHY,

Assistant Superintendent of Streets, in Charge.

ANNUAL REPORT

# BUREAU OF COMPENSATION

CITY OF CHICAGO

1909

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**H. V. McGURREN**
SUPERINTENDENT

# BUREAU OF COMPENSATION

CHICAGO, January 1, 1910.

HON. JOHN J. HANBERG,
Commissioner of Public Works.

DEAR SIR:—I submit herewith report of the work accomplished by the Bureau of Compensation for the year ending December 31st, 1909:

## COMPARISON OF ACCOUNTS ESTABLISHED DURING YEARS OF 1908 AND 1909.

| | 1909. | 1908. | Increase. | Decrease. |
|---|---|---|---|---|
| Switch tracks | $ 10,177.58 | $ 2,172.85 | $ 8,004.73 | ......... |
| Bay windows and store fronts | 1,979.75 | 485.37 | 1,494.38 | ......... |
| Canopies | 950.00 | 575.00 | 375.00 | ......... |
| Scales in streets and alleys | 450.00 | 350.00 | 100.00 | ......... |
| Use of streets, alleys and docks | 8,850.36 | 9,288.26 | ......... | $ 437.90 |
| Sub-sidewalk and alley space | 1,465.21 | 258.00 | 1,207.21 | ......... |
| Vacations of streets and alleys | 76,510.64 | 31,560.67 | 44,949.97 | ......... |
| Bridges over streets and alleys | 641.26 | | | |
| Miscellaneous—pipes and wires | .......... | 340.00 | 581.26 | ......... |
| under and over streets & alleys | 280.00 | | | |
| Bulkheads, platforms, etc | 625.00 | 348.16 | 276.84 | ......... |
| Merchandise stands | 9,708.58 | 9,012.16 | 696.42 | ......... |
| Sidewalk openings and signs | 9,694.33 | 13,639.50 | ......... | 3,945.17 |
| Total | $121,332.71 | $68,029.97 | $57,685.81 | $4,383.07 |
| Amount collected under accounts established by the Bureau prior to January 1, 1909 | 109,426.10 | 104,044.56 | 5,381.54 | ......... |
| Total | $230,758.81 | 172,074.53 | $58,684.28 | ......... |

All of the compensation accounts show a considerable increase for the year of 1909, with the exception of rental for streets, alleys, public docks, etc., which shows a slight decrease of $437.90, and the sidewalk openings, which shows a decrease of $3,945.17. The revenue from permits allowing openings in sidewalks is largely derived from persons constructing new sidewalks or reconstructing old sidewalks, and the amount of the revenue depends almost entirely upon the amount of work which property owners are required to do by the Board of Local Improvements. During the year the Bureau has issued thirty-six hundred and twelve (3612) permits requiring the payment of $19,402.91 in fees, three hundred and six (306) permits requiring no fees and eighty-one (81) permits under ordinances passed by the Council and orders passed by the Compensation Committee.

In the last annual report of the Bureau it was stated that if the recommendation of the Industrial Commission appointed by the Mayor, providing for the establishment of a Local Industries Committee in the City Council for the purpose of considering applications for switch tracks and vacations of streets and alleys for industrial purposes only, was carried out, the work of the Bureau would be greatly facilitated and the amount of compensation derived from this source considerably increased. When the Council was reorganized, in April, 1909, this suggestion was favorably acted upon and a committee of fifteen members, with Alderman Michael Zimmer as chairman, was appointed. The increase of $44,949.97 paid under ordinances vacating streets and alleys, and the increase of $8,004.73 paid under ordinances providing for switch tracks during the year of 1909, more than fulfills the prophecy of the amount of work that the Local Industries Committee would do. This committee has been in existence about eight months and during that time there have been referred to it by the City Council sixty-three (63) vacation ordinances and fifty-two (52) switch track ordinances. Of this number thirty-eight (38) vacation ordinances have been recommended for passage, nine (9) placed on file, ten (10) referred to other committees and six (6) are still pending. Forty-eight (48) switch track ordinances have been recommended for passage and four (4) placed on file. By request of the chairman, a representative of the Bureau has been present at all meetings of the committee, and the creation of the committee has added considerably more work for the Bureau to carry out. This additional work is more than justified, however, by the results which have been obtained, as the matters referred by the Bureau to this committee through the Council have been investigated promptly and acted upon expeditiously. The large number of applications which have been made to the City Council during the past year for the passage of ordinances vacating streets and alleys and authorizing the maintenance of switch tracks is a clear indication that a number of new industries are being brought into Chicago, and that the old industries which are now located here are increasing their facilities. The creation of the Local Industries Committee, I believe, is the cause of this progress, as the policy of the City Council in assisting in the location of industries by the passage of vacation and switch track ordinances is well defined, and the Chicago Association of Commerce, representing the industrial interests of the City, has given its support and approval to the policy the Council is pursuing. The year of 1909 is the first year that the manufacturing interests have been in accord with the City's policy since the Council first insisted upon the payment of compensation for such privileges.

During the past year the Compensation Committee has acted upon two hundred and seventy-three (273) matters referred to it by the City Council and this Bureau. The support which the Bureau has received in the carrying out of its work from this committee cannot be overestimated, and I can recall no instance where the recommendations of the Bureau have not been favorably acted upon by the committee. Alderman B. W. Snow, of the Seventh Ward, who originated the idea of the Compensation Committee, has been chairman of the committee since its inception, February 29th, 1904, until the reorganization of the Council in April, 1909. Owing to the retirement of Alderman Frank I. Bennett, of the Seventh Ward, who was chairman of the Finance Committee, Alderman Snow was selected by the Council as his successor, and because of this selection was compelled to relinquish the chairmanship of the Compensation Committee, although he still remains a member of the committee. A great deal of the credit for the present standing of the Bureau and the success it has had in carrying out the compensation idea must be given to Alderman Snow, because of the earnest support which he has given to this policy in the City Council and the care he has taken in watching all ordinances granting special privileges and insisting that they should provide for the payment of compensation to the City. In addition to his services on the floor of the Council, he has also given considerable of his time outside to aid this work. It is to be hoped that Alderman Snow's duties as chairman of the Finance Committee will not prevent him from giving the same aid as heretofore. Alderman Snow was succeeded as chairman by Alderman Nicholas R. Finn, whose experience as a former member of the committee has familiarized him with the policy to be pursued in carrying on this work.

A part of the credit for the increase in the revenue of the Bureau must be attributed to the work of the Public Lands Committee. On account of the small number of employees in the Bureau, there being only three, it must necessarily depend upon other bureaus and sources for information concerning the illegal use of public property. The Public Lands Committee has had investigators working for several years on this work only, and by the aid of reports which have been from time to time submitted to the Bureau it has been possible to secure considerable compensation due the City. There are still pending before that committee about five hundred reports which have not as yet been acted upon, and I understand that it is the intention to transfer all of that information to this office in the near future. With this material to work upon, there will unquestionably be a considerable increase in the revenue of the Bureau for the year of 1910.

One of the chief difficulties with which this office has to contend in investigating the use of streets by railroads is the lack of information as to the exact right-of-way to which they are entitled. In previous reports I have from time to time recommended that an attempt be made to secure plats showing the rights-of-way of each railroad in the City of Chicago. If the proper methods were used, these could be undoubtedly secured from the various railroads. There is no reason why the records should not be complete on this subject and the information contained would be almost invaluable to the Department of Public Works and the Track Elevation Department.

The City Council has from time to time passed track elevation ordinances, in which provision is made that all streets and alleys running into the railroad elevation for which subways are not provided shall be vacated and closed. No provision, however, has ever been made in these ordinances requiring the grantees to file a certified copy of the ordinance and a plat showing the vacation of the various streets and alleys with the County Recorder. Because of this neglect, the City maps at the present time do not show the vacation of any of the streets provided for in the track elevation ordinances. I would earnestly recommend that in all future track elevation ordinances the same care be taken in providing for the filing of plats as is taken in the passage of vacation ordinances for other interests.

The centralization of all work in connection with the granting of special privileges into this Bureau has been, I believe, a great benefit to both the general public and the City. This is due to the fact that the Bureau has a general knowledge of the contents of all ordinances of this character from the time that they are first under consideration by the various Council committees, and it is not necessary to spend considerable time investigating them after they are passed by the Council. Such ordinances are always referred to the Bureau by the Committee on Compensation and are carefully scrutinized before passage by the Council. The general public is beginning to take advantage of the fact that information concerning pending ordinances can be secured from the Bureau of Compensation and daily requests are being made of the Bureau for such information.

In closing I personally wish to express my thanks for the aid and encouragement given me in carrying out the work of the Bureau.

Respectfully submitted,

H. V. McGURREN,

Superintendent.

ANNUAL REPORT

# BUREAU OF ARCHITECTURE

CITY OF CHICAGO

1909

---

WILLIAM G. KRIEG
CITY ARCHITECT

# BUREAU OF ARCHITECTURE

April 18, 1910.

HON. JOHN J. HANBERG,
Commissioner of Public Works.

DEAR SIR:—I have the honor to submit herewith the annual report of the Bureau of Architecture for the year ending December 31st, 1909.

On January 1st, 1909, the work under construction in charge of the Bureau was as follows:,

Cell House at the House of Correction.

Public Bath House at 20th and Lincoln Sts.

Shelter and Sand Court at Perry St. and Wrightwood Ave. Playground.

The following buildings although far enough completed to be occupied January 1st, 1909, required the attention of the supervising and general office sections of this Bureau for the first three months of the year before they were finally completed and accepted.

Police Stations:—
115th St. and Indiana Ave.
75th St. and Jackson Ave.
39th St. and California Ave.

Patrol Barn:—
49th and Grand Aves.

Isolation Hospital:—
34th St. and Hamlin Ave.

Bath House:—
12th St. and Union St.

Playground Shelters:—
Perry St. and Wrightwood Ave.
27th St. and Sawyer Ave.

Work on the boards January 1st, 1909, consisted of plan for remodeling Chicago Avenue Pump Station and the designing of Roseland Pump Station.

Thirty orders for new work were placed with the Bureau during the year, the work consisting mostly of plans for repair work and alterations to existing buildings, the most important of which are the following:

Remodeling of the Hyde Park Police Station.

Remodeling of Fire Stations at—
31st and Dearborn Sts.
13 E. Taylor St.
344 E. 55th St.
93rd St. and S. Chicago Ave.
92nd St. and Calumet River.
1931 Archer Ave.

For the House of Correction the Bureau prepared plans and specifications for a complete drainage and water supply system to be installed in the new men's cell house. Also made tentative plans for yard and parkway improvements consisting of concrete and iron fence and gateways; underground conduit system to replace present line of wires and poles; lamp posts; culverts, etc.

Among the many minor orders requiring the services of the employes of this Bureau were shelters and sand courts at the Washington Playground; heating systems for playground shelters at Perry and Wrightwood Ave. and 22nd and Robey Sts.; enclosures and gate entrances for Holden and N. W. El. playgrounds; typical concrete fence designs; repairs, etc., for the Mosely playground; lay-out of playground at La Salle Ave. and Superior St. and the plan of park at 79th St. and Lake Michigan; also plan for playground at Grand Ave. and Curtis St.; outline sketches for Tuberculosis Hospital to form estimate of cost. Sketches were also made during the year for engine houses at Rogers Park, 6200 Green St., 7101 Parnell Ave., also for proposed alterations on numerous old buildings which were abandoned owing to cost of improvements and lack of funds.

Examination of numerous old police stations and fire engine houses was made by the architect in conjunction with the Chief of Police and the Fire Marshal. The Bureau for sanitary and other reasons advised many minor changes which were carried out by the repair department, also advised the abandonment of contemplated remodeling of several buildings owing to the depreciated condition of old buildings.

The Bureau reduced the force of employes on March 1st and again on Oct. 1st, 1909, owing to lack of work.

An item of special interest in charge of the Bureau during the year was the cell house at the House of Correction which was built without the assistance of general or sub-contractors with the exception of the structural steel and roofing contracts.

The brick and artificial stone also the crushed stone for the reinforced concrete work used in this building was supplied by the institution from their manufacturing department; other material such as plumbing fixtures, pipes, rods, wire, etc., was purchased by the House of Correction and installed by the inmates in charge of guards under the direct supervision of this Bureau which will result in the completion of a $200,000.00 building at a cost of approximately $60,000.00 to the City and at the same time producing a model sanitary penal institution differing in construction from any existing cell house. The construction was carried forward without friction of any kind and without accident to any inmates. The general construction had progressed to within 15 per cent of completion when work had to be abandoned owing to cold weather.

Working in conjunction with the Bureau of Engineering the plans and specifications of the Roseland Pump Station were carefully prepared and checked bids were advertised for and the contract for the general work was let to the Warner Construction Co. for the sum of $229,864.00 and the plumbing and heating contract to Carl John Stein for the sum of $10,600.00. The contract calls for the commencement of work January 1st, 1910, and the completion December 31st, 1910.

Respectfully submitted,
WILLIAM G. KRIEG,
City Architect.

ANNUAL REPORT

# BUREAU OF MAPS AND PLATS

CITY OF CHICAGO

1909

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**JNO. D. RILEY**
SUPERINTENDENT

# BUREAU OF MAPS AND PLATS

CHICAGO, January 1, 1909.

HON. JOHN J. HANBERG,
Commissioner of Public Works.

DEAR SIR:—Herewith I beg to submit the annual report of the Bureau of Maps and Plats for the year ending December 31, 1909.

The past year has been an exceedingly busy one for this Bureau by reason of the fact that, in addition to our routine work, the enforcement of the new house number ordinance, which became effective September 1, 1909, devolved upon us.

Acting in conjunction with the Bureau of Water, through which channel the notices to change were sent to the individual property owners in connection with the water bill, the whole work was accomplished in a most satisfactory manner and with the minimum amount of friction. So far is this true, indeed, that out of the 185,000 changes it did not become necessary in a single instance to resort to prosecution in order to secure compliance with the terms of the ordinance.

The new system, which is illustrated by a map attached to this report, had its inception and was developed and worked out by this Bureau acting in conjunction with the Committees on Street Nomenclature of 1906, 1907, 1908 and 1909, the chairman of the Committee on Street Nomenclature for 1909 being Alderman Jacob A. Hey, under whose direction the ordinance was introduced and passed in the City Council. Great credit is due this last mentioned committee, and especially its chairman, for the vigorous manner in which this reform was brought to a successful issue in the City Council, where the same proposition for the past twenty years had been side-stepped as being one too risky, from the standpoint of an alderman, to consider seriously.

Under the old system of house numbers the greatest confusion existed by reason of the fact that Chicago as constituted today is the result of growth by annexation of the various towns and villages formerly outside the present City limits and all of which had house number systems of their own and also by reason of the fact that the irregular shore of the lake running at an angle to the southeast; the river in certain portions, State street on the south side and Western avenue up north were all used as base lines, whereas under the new system, corresponding houses on parallel streets anywhere within the City limits have the same number. In other words, if we take a house located on Howard street, the northern limit of the city, numbered, for instance, 3110; and also a house located on W. Eighty-seventh street, the southern limit of the city at that point, numbered 3110, and in our imagination stretch a line between these two points every house over which the line passes will have the number 3110. This result is obtained throughout the entire city by the use of two base lines; namely, State street and its continuation in a northerly direction into Lake Michigan, as the north and south base, and Madison street as the east and west base, which lines are used as the dividing lines between prefixes East, West, North and South, and also as bases from which the City is numbered on the basis of 800 numbers to the mile in all directions from the aforementioned base lines. There are, however, two exceptions to the above, the first being on the north and south streets between Madison street and Thirty-first street, in which territory 1200 numbers are assigned between Madison and Twelfth street; 1,000 numbers between Twelfth street and Twenty-second street; 900 numbers between Twenty-second street and Thirty-first street, the second exception being the down-town district lying between the river, the lake and Twelfth street, in which section no change whatever was made. The allotment of 800 numbers to the mile is again divided into 100's, the number changing from one 100 to the next succeeding 100 at the intersecting street nearest each one-eighth of a mile division line. This allotment and division of numbers was decided upon by reason of the fact that the south side with its numbered system of east and west streets was divided on this basis, and also by reason of the further fact that approximately eighty per cent of the subdivided area of the City is laid out on the basis of intersecting streets every one-eighth of a mile in one direction and every one-sixteenth of a mile in the other.

The proposition of including the down-town district heretofore mentioned as an exception to the general scheme is now being considered and has been introduced in the Council by the Committee on Street Nomenclature in the form of an ordinance. This ordinance should be passed, thus making the system cover the entire City. The objection to it on the ground of long established numbers for business houses does not hold in a great many instances. Ninety-nine people out of every hundred in Chicago can go direct to any of the large business houses without having any idea of its number. To the contrary it is safe to say that not one in a hundred has any idea of the number of any given department store. The new system of numbers has met with the commendation of practically everybody, especially of the postal authorities, the express companies and the mercantile houses, which have to do with extensive deliveries, and inasmuch as these authorities, companies and mercantile houses have benefited by the new system to the greatest extent, they should be willing to shoulder their share of the temporary inconvenience which would be caused them by a change in the down-town district. If this extension be made the ordinance could provide that it should not become effective for one year after passage so as to give the various interests affected ample time in which to make necessary changes in stationery, etc. Under such extension the down-town district would become an index both as to prefixes and numbers for the entire City and would undoubtedly be of great assistance to residents and strangers alike.

The investigation of quit-claim deeds running to the City of Chicago has been carried forward and it is expected that by the end of this year the information will be compiled in such form as to make it possible to go ahead and secure tangible results.

The unsatisfactory conditions heretofore existing in connection with ordinances running to the Board of Education for the vacation of streets and alleys in connection with school sites have been straightened out and a new form of ordinance has been determined upon, under which it will be possible for this Bureau to keep its records posted as to the various changes of streets and alleys in connection with school sites by the Board of Education.

The reconstruction of the official atlases has been carried on in a very satisfactory manner, although not as much of this work was done as might have been desired. This, however, was due to the fact that practically the entire force was engaged for the greater portion of the year on work in connection with the new house number ordinance.

During the year two surveys, one of the range line, Western avenue, from Thirty-ninth street to Eighty-seventh street, and the other of the township line, North avenue, from Western avenue to N. Seventy-second avenue, were made by Emil Rudolph, surveyor, the same being paid for out of an appropriation for that purpose. These surveys have been of great assistance to this Bureau in straightening out the records on these two lines, and have also proved of great value to the Division engineers of the Board of Local Improvements. In connection with this matter I wish to refer again to the subject of a Bureau of Surveys mentioned in my report of 1908, the necessity for which becomes more apparent every day. Such a division or bureau, if established, should have for its ultimate object a survey of the entire City and the establishing of corner stones, or other references, for every street intersection. This plan would eliminate the confusion and difficulties which arise all the time by reason of defective surveys made principally ante-fire.

Considerable confusion exists and serious inconvenience is caused the Board of Local Improvements in its special assessment work by reason of the fact that the atlases of this Bureau do not show definitely existing conditions so far as they relate to the various steam railroads within the City limits. This defect in our records is caused by reason of the fact that our atlases consist of a compilation of the records in the Recorder's Office as to subdivisions, etc., and inasmuch as the various railroads, for reasons best known to themselves, have neglected to record plats showing acquisitions to their various rights-of-way, it has not been possible for us to secure information in the regular manner. However, we are now engaged in an effort to secure as much of this information as possible from the blue prints of the various trunk lines on file in the Department of Track Elevation and also from the tract books in the Recorder's Office. As a matter of fact, however, the statute on plats provides that when any railroad is laid out, located, opened, widened or extended, or the location thereof altered, it shall be the duty of the commissioners, authorities, officers, persons or corporations, public or private, laying out, locating, opening, widening, extending or altering the same to cause a plat thereof showing the width, etc., etc., to be made and recorded in the office of the Recorder of the county in which the premises taken or used for same are situated. The statute further provides that whenever it shall come to the knowledge of the Recorder of Deeds of any county that any of the provisions of this act have been violated, it shall be his duty to notify the State's Attorney of the fact, and the State's Attorney shall immediately institute suit and prosecute the same to final judgment against the person offending. This matter should be taken up by the City Council and an effort made, through the Recorder, to secure compliance by the railroads with this provision.

Another confusing condition has arisen in connection with the railroads by reason of the fact that in various track elevation ordinances, excepting those passed recently, the ordinance did not provide as one of the terms thereof that a plat should be recorded showing the various dedications and vacations authorized under the terms of such ordinance, the result being that the various railroads have made certain vacations and dedications physically without making any record of the same in the Recorder's Office. In order to straighten out this tangle, a compilation has been made in this Bureau of all of the various track elevation ordinances, which compilation will be used as the basis of an inspection to determine just what the railroads have done in this connection. This matter, however, should be considered in connection with my recommendation that the railroads be required to file for record with the Recorder plats showing their rights-of-way and way-lands.

This Bureau has been requested by the Committee on Street Nomenclature to prepare a report on the subject of changing the names of east and west streets on the north side to numbered avenues. Such report, however, involves a large amount of preliminary work and will not be made as a report covering that one section of the City alone, but will be treated in a report covering the entire City, my recommendation being that some definite plan of street nomenclature for the entire City be first determined upon and that thereafter no changes of any character be made, excepting as would conform to such system.

In view of the contemplated change in ward boundaries following the United States census of this year, I am including in this report a map of the City showing the present ward boundaries.

PLATS MADE.

| NO. OF PLATS. | | MILES. |
|---|---|---|
| 399 | Assessment plats, street improvements | 195.125 |
| 493 | Assessment plats, sidewalk improvements | 224.25 |
| 120 | Assessment plats, sewer improvements | 111.25 |
| 92 | Assessment plats, drains | 28.00 |
| 397 | Estimate plats | 134.75 |
| 19 | Survey plats | 12.50 |
| 9 | Opening plats | 7.875 |

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### PLATS MADE.

| NO. OF PLATS. | | MILES. |
|---|---|---|
| 232 | Water Pipe Extension plats | 69.50 |
| 23 | Condemnation plats | 4.875 |
| 64 | Vacation plats | 9.00 |
| 1,848 | Total | 797.125 |

### MISCELLANEOUS MAPS AND PLATS.

| | NO. OF PLATS. |
|---|---|
| Plats for Aldermen | 71 |
| Plats for Corporation Counsel | 152 |
| Plats for Street Department | 5 |
| Plats for Real Estate Agent | 28 |
| Plats for City Collector | 21 |
| Plats for City Attorney | 7 |
| Plats for Compensation Bureau | 103 |
| Plats for Track Elevation | 0 |
| Plats for Building Department | 15 |
| Plats for City Statistician | 1 |
| Plats for City Clerk | 20 |
| Plats for Health Department | 6 |
| Plats for Commissioner of Public Works | 17 |
| Plats for City Electrician | 1 |
| Plats for Special Assessment Attorney | 4 |
| Plats for Board of Local Improvements | 22 |
| Plats for Committee on Public Lands | 40 |
| Signs for Various Departments | 78 |
| Plats for City Sealer | 1 |
| Plats for City Engineer | 3 |
| Plats for Chief of Police | 102 |
| Plats for Special Park Committee | 2 |
| Plats for Municipal Courts | 1 |
| | 700 |
| | 1,848 |
| Total number of plats | 2,548 |

### NEW CONSTRUCTION WORK.

| | PAGES. |
|---|---|
| City Map Department, Vol. 1 | 10 |
| City Map Department, Vol. 2 | 4 |
| City Map Department, Vol. 4 | 3 |
| Lake View | 10 |
| Hyde Park, Vol. 1 | 11 |
| Total | 38 |

### MISCELLANEOUS WORK.

| | NUMBER. |
|---|---|
| Petitions for Street Car Franchises verified, 1 man 41 days | 7 |
| Petitions for Saloon Licenses verified, 1 man 121 days | 56 |
| Petitions for House Moving verified | 233 |
| Petitions for Building verified | 22 |
| Petitions for Junk, Garage, Sign Boards, Lumber Yards and Switch Tracks | 17 |
| Total | 335 |

| | DAYS. |
|---|---|
| Maps, City of Chicago, coloring parks, boulevards and wards, 1 man | 178½ |
| Ward map of City of Chicago, 1 man | 26½ |
| Map of City of Chicago, coloring prohibition district, 1 man | 15 |
| Report for Street Nomenclature Committee | 18 |
| One man at Recorder's Office | 14½ |
| One man in Court | 2 |
| Charts or signs, 1 man | 100 |
| Police Department maps, 1 man | 31 |
| Scrapping descriptions of wards for Commissioner of Public Works, 1 man | 11 |
| Fire Department maps, 1 man | 1½ |
| Collector's Office, 1 man | 2 |
| Health Department, 1 man | 34 |
| Report for Commissioner of Public Works | 3½ |
| Posting Atlases, Chicago No. 2, 1 man | 20 |

| | NUMBER. |
|---|---|
| House numbers changed (special cases on complaint) | 248 |
| Entries made in Atlases | 641 |
| New subdivisions approved | 235 |
| Vacation plats approved | 53 |
| Dedication plats approved | 43 |
| Vacation ordinances verified | 75 |
| Legal descriptions issued at 25c each, $943.25 | 3,773 |
| Legal descriptions issued free | 651 |
| House numbers issued without certificates | 17,025 |
| House number certificates issued | 10,652 |
| Public requiring personal attention | 32,101 |
| Public having recourse to atlases | 160,000 |
| House numbers changed in conformity with new house numbering ordinance | 185,000 |

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| | | |
|---|---|---|
| Total miles of streets December 31, 1908 | | 2,860.999 |
| Total miles of streets newly opened | 24.213 | |
| Total miles of streets vacated | 4.547 | |
| Increase | 19.666 | 19.666 |
| Total miles of streets December 31, 1909 | | 2,880.665 |
| Total miles of alleys December 31, 1908 | | 1,415.158 |
| Total miles of alleys newly opened | 23.989 | |
| Total miles of alleys vacated | 4.259 | |
| Increase | 19.730 | 19.730 |
| Total miles of alleys December 31, 1909 | | 1,434.888 |
| Area of city | 190.638 square miles | |

In conclusion permit me to thank you for your courteous treatment and for your consideration in connection with the performance of my official duties.

Respectfully submitted,
JOHN D. RILEY,
Superintendent of Maps.

ANNUAL REPORT

# ACCOUNTING DIVISION

DEPARTMENT OF PUBLIC WORKS

1909

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**JOHN A. KLEINE**
CHIEF ACCOUNTANT

# DEPARTMENT OF PUBLIC WORKS

# ACCOUNTING DIVISION

HON. JOHN J. HANBERG,
Commissioner of Public Works:

DEAR SIR:—I have the honor to submit herewith the annual report of the Accounting Division of the Department of Public Works for the fiscal year ending December 31, 1909.

The contents comprise the following series of financial statements, which are self-explanatory:

Table No. 1. Statement of Appropriations and Expenditures for the year 1909—Corporate Fund, Ordinary Accounts.

Table No. 2. Statement of Appropriations and Expenditures for the year 1909—Corporate Fund, Extraordinary Accounts.

Table No. 3. Statement of Appropriations and Expenditures for the year 1909—Corporate Fund, Summary of Ordinary and Extraordinary Accounts.

Table No. 4. Statement of Expenditures of Bureau of Streets During the year 1909.

Table No. 5. Detailed Statement of Ward Expenditures of Bureau of Streets for the year 1909.

Table No. 6. Detailed Statement of Expenditures from Vehicle Tax Fund by Wards, for Repair of Improved Streets, for the year 1909.

Table No. 7. Statement of Expenditures of Bureau of Sewers During the year 1909.

Table No. 8. Detailed Statement of Expenditures for Operation and Repairs of Sewerage Pumping Stations for the year 1909.

Table No. 9. Statement of Expenditures of Bureau of Bridges, Harbor and Viaducts During the year 1909.

Table No. 10. Statement of Expenditures for Rent and Equipment of Temporary Quarters, Removal of City Offices and Construction of New City Hall.

Table No. 11. Statement of Corporate Fund Revenue of Department of Public Works for the year 1909.

Table No. 12. Statement of Appropriations and Expenditures for the year 1909—Water Fund, Ordinary Accounts.

Table No. 13. Statement of Appropriations and Expenditures for for the year 1909—Water Fund, Extraordinary Accounts.

Table No. 14. Statement of Appropriations and Expenditures for the year 1909—Water Fund, Summary of Ordinary and Extraordinary Accounts.

Table No. 15. Statement of Revenue for the year 1909—Water Fund, Ordinary and Extraordinary Accounts.

Table No. 16. Comparative Statement of Ordinary Revenue and Ordinary Expense of Water System for the years 1902 to 1909 inclusive.

Table No. 17. Statement of Free Water Service Rendered by the Chicago Water Works During the Year 1909.

Table No. 18. Statement of Water Fund Collections During the year 1909.

Table No. 19. Statement of Expenditures for Operation of Water System, Including Interest, During the year 1909.

Table No. 20. Statement of Expenditures for Repairs and Renewals of Water Works Property and Equipment, During the year 1909.

Table No. 21. Statement of Expenditures for Additions, Extensions and Betterments of Water Works Property and Equipment, During the year 1909.

Table No. 22. Comparative Statement of Expenditures for Operation of Water System, Including Interest, for the years 1906 to 1909 inclusive.

Table No. 23. Comparative Statement of Expenditures for Repairs and Renewals of Water Works Property and Equipment for the years 1906 to 1909 inclusive.

Table No. 24. Comparative Statement of Expenditures for Additions, Extensions and Betterments of Water Works Property and Equipment for the years 1906 to 1909 inclusive.

Table No. 25. Detailed Statement of Expenditures for Operation and Repairs of Cribs for the year 1909.

Table No. 26. Detailed Statement of Expenditures for Operation of Pumping Stations During the year 1909.

Table No. 27. Detailed Statement of Expenditures for Repairs and Renewals of Pumping Stations During the year 1909.

Table No. 28. Detailed Statement of Expenditures for Additions, Extensions and Betterments of Pumping Stations During the year 1909.

Table No. 29. Comparative Statement of Expenditures for Operation of Pumping Stations During the years 1902 to 1909 inclusive.

Table No. 30. Comparative Statement of Expenditures for Repairs and Renewals of Pumping Stations During the years 1902 to 1909 inclusive.

Table No. 31. Comparative Statement of Total Ordinary Expenditures for Operation and Repairs and Renewals of Pumping Stations During the Years 1902 to 1909 inclusive.

Table No. 32. Detailed Statement of Expenditures for Mains and Hydrants During the year 1909.

Table No. 33. Detailed Statement of Expenditures for Meter Installation and Repairs During the year 1909.

Table No. 34. Classified Summary of Appraisement of Chicago Water Works Property and Equipment, December 31, 1909.

Table No. 35. Appraisement of Chicago Water Works Property and Equipment, December 31, 1909.

Table No. 36. Percentage Table of Depreciation.

Table No. 37. Statement of Operation of Water Works Shops and Repair Division for the year 1909.

Table No. 38. Some Comparable Data on Rate of Wages of Employes Per Day or Per Year, in various Bureaus of Department of Public Works, During the years 1906, 1907, 1908 and 1909, and Rate Per Cent. Increase of 1909 over 1906.

Table No. 39. Statement of Estimated Amounts Necessary to Carry Existing Contracts, December 31, 1909, to Completion, Including Unpaid Reserves of Same and Allowance for Engineering and Inspection Expense.

Table No. 40. Statement of Contract Reserves Unpaid December 31, 1909.

Table No. 41. Statement of Unexpended Balances of Appropriations of 1909 Carried Forward to 1910 by Reason of Contract Liability.

Table No. 42. Trial Balance of Water Works General Ledger, December 31, 1909.

Table No. 43. Trial Balance of Water Works General Ledger, January 1, 1910.

Table No. 44. City of Chicago Water Loan Bonds Outstanding, January 1, 1910.

Table No. 45. Statement of Estimated Cost of and Revenue From Supplying Water to Consumers During the year 1909.

Very respectfully,

JOHN A. KLEINE,
Chief Accountant.

## TABLE No. I.

## STATEMENT OF APPROPRIATIONS AND EXPENDITURES FOR THE YEAR 1909—CORPORATE FUND, ORDINARY ACCOUNTS.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| **OFFICE OF COMMISSIONER OF PUBLIC WORKS:** | | | |
| Office salaries—10%............. | $ 2,952.00 | $ 2,948.28 | $ 3.72 |
| Office salaries, extra work for regular employes .....$ 50.00<br>By Transfer Council order, Dec. 6, 1909... 2,000.00 | 2,050.00 | 1,429.80 | 620.20 |
| Office expenses—10%.... $450.00<br>By Ordinance, May 10, 1909 . ............. 105.00 | 555.00 | 535.67 | 19.33 |
| **BUREAU OF MAPS AND PLATS:** | | | |
| Office salaries—25% ............. | 7,980.00 | 7,923.37 | 56.63 |
| Office expenses drawing material, etc.—25% . .................. | 550.92 | 545.58 | 5.34 |
| Special work, new atlases, etc.. | 2,600.00 | 1,316.82 | 1,183.18 |
| Unpaid bills of 1908 ........... | 283.16 | 233.16 | ............ |
| **CITY ARCHITECT'S OFFICE:** | | | |
| Office salaries .................. | 14,338.00 | 12,800.97 | 1,537.03 |
| Office expenses ................. | 1,000.00 | 787.45 | 212.55 |
| **BUREAU OF BRIDGES AND HARBOR:** .................. | | | |
| Office salaries .................. | 3,000.00 | 3,000.00 | ............ |
| Office expenses, stationery, etc.. | 1,250.00 | 1,178.97 | 71.03 |
| Telephone service .............. | 672.00 | 626.32 | 45.68 |
| Street car and railroad transportation .................... | 2,000.00 | 1,824.98 | 175.02 |
| Bridges and Viaducts, repairs and renewals, salaries..$129,314.67<br>By Transfer Council order Oct. 26, 1909. 26,000.00 | 155,314.67 | 150,035.98 | 5,278.69 |
| Repairs and renewals, material ...........$100,188.96<br>Less Transfer Council order, Oct. 26, 1909 . . ......... 20,000.00 | 80,188.96 | 77,249.03 | 2,939.93 |
| Repairing viaducts on account railroad companies ........... | 30,000.00 | 13,453.30 | 16,546.70 |
| Repairing damaged bridges (to be reimbursed) . ............... | 15,000.00 | 14,803.81 | 196.19 |
| Repairing pile construcions..... | 266.66 | 266.66 | ............ |
| Reconstruction of heel locks and brakes . ..................... | 5,000.00 | 4,502.00 | 498.00 |
| Repainting bridges ............. | 30,000.00 | 15,067.80 | 14,932.20 |
| Carried forward ............. | $ 354,851.37 | $ 310,529.95 | $ 44,321.42 |

## CORPORATE FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 354,851.37 | $ 310,529.95 | $ 44,321.42 |
| BUREAU OF BRIDGES AND HARBOR—Continued. | | | |
| Repairs to Madison st. bridge...<br>By Ordinance, Nov. 29, 1909. ............ $25,000.00<br>By Ordinance, Dec. 20, 1909. ............ 2,000.00 | 27,000.00 | 20,363.40 | 6,636.60 |
| Repairs to S. Western ave. bridge (West Fork) | 10,000.00 | ............ | 10,000.00 |
| Pontoon bridge at Madison st...<br>By Ordinance, Nov. 29, 1909. ............ $5,000.00<br>Less Transfer Council order, Dec. 20, 1909. 2,000.00 | 3,000.00 | ............ | 3,000.00 |
| Removing Blackhawk st. and Weed st. bridges.............<br>By Ordinance, Jan. 3, 1910.... | 8,000.00 | ............ | 8,000.00 |
| Removing Blackhawk st. bridge.<br>By Ordinance. Jan. 10, 1910... | 5,000.00 | ............ | 5,000.00 |
| Removal and relocation of Weed st. bridge ..................<br>By Ordinance, Jan. 10, 1910... | 7,000.00 | ............ | 7,000.00 |
| Bridge operation: | | | |
| Bridge tenders' salaries....... | 169,200.00 | 165,972.47 | 3,227.53 |
| Instruction of new bridge tenders and emergency operation of bridges............. | 2,500.00 | 2,500.00 | ............ |
| Fuel .......................... | 5,000.00 | 4,111.05 | 888.95 |
| Supplies . ........... $25,000.00<br>Less Transfer Council order, Oct. 26, 1909. 6,000.00 | 19,000.00 | 14,725.47 | 4,274.53 |
| Operation of ferry at 100th st... | 1,200.00 | 900.00 | 300.00 |
| Operation of ferry at Polk st... | 3,000.00 | 2,841.75 | 158.25 |
| Operation of ferry at Madison st.<br>By Ordinance Council order, Dec. 6, 1909................ | 2,500.00 | 116.05 | 2,383.95 |
| CHICAGO HARBOR: | | | |
| Salaries ...................... | 17,340.00 | 16,944.54 | 395.46 |
| Removal of sunken vessels and other obstructions ........... | 3,107.83 | 478.04 | 2,629.79 |
| Protection of street ends and public ways ................ | 10,208.80 | 8,613.72 | 1,595.08 |
| Repairs to vessel dispatcher's office ........................ | 800.00 | 4.39 | 795.61 |
| Operation and maintenance of harbor launches .............. | 500.00 | 68.32 | 431.68 |
| Lighting vessel dispatcher's office | 60.00 | 49.39 | 10.61 |
| Inspection and engineering for corporations ................. | 6,000.00 | 3,718.40 | 2,281.60 |
| Bonds for bridge tenders, harbor masters, vessel dispatchers, etc. | 1,500.00 | 833.50 | 666.50 |
| Carried forward ............. | $ 656,768.00 | $ 552,770.44 | $ 103,997.56 |

## CORPORATE FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward ............ | $ 656,768.00 | $ 552,770.44 | $ 103,997.56 |
| **BUREAU OF STREETS:** | | | |
| Office salaries .................. | 28.530.00 | 25,589.80 | 2,940.20 |
| Inspectors of street openings and obstructions ................. | 6,993.00 | 6,930.61 | 62.39 |
| Office expenses ................ | 2,000.00 | 1,991.62 | 8.38 |
| Chauffeur ...................... | 250.00 | 250.00 | ............ |
| Street car and railroad transportation ...................... | 1,000.00 | 1,000.00 | ............ |
| Extra work for regular employes | 300.00 | 300.00 | ............ |
| Ward superintendents salaries... | 79,200.00 | 79,126.82 | 73.18 |
| Street cleaning salaries ........ | 818,000.00 | 802,075.24 | 15,924.76 |
| Street cleaning in 1st ward, by Citizens' street cleaning association .............$36,000.00<br>By Ordinance, July 17, 1908 .......... 4,473.07<br>By Ordinance, June 21, 1909 .......... 8,928.64 | 49,401.71 | 49,401.71 | ............ |
| Street cleaning; other........... | 22,000.00 | 20,223.74 | 1,776.26 |
| Snow removal, 1st ward......... | 50,000.00 | 50,000.00 | |
| Repairs to snow dump.......... | 5,000.00 | 916.21 | 4,083.79 |
| Garbage collection—salaries..... | 1,075,000.00 | 1,069,100.89 | 5,899.11 |
| Garbage collection—salaries at loading stations ............. | 34,750.00 | 34.694.83 | 55.17 |
| Disposition of pure garbage: | | | |
| Reduction ...................... | 48,093.74 | 47,499.99 | 593.75 |
| Repairs and maintenance of wagons, harness, etc........ | 1,100.00 | 1,036.80 | 63.20 |
| Repairs and maintenance of docks and loading stations.. | 614.51 | 601.34 | 13.17 |
| Operation of tugs and scows. | 15,944.50 | 15,702.68 | 241.82 |
| Miscellaneous ................ | 5,000.00 | 4,922.69 | 77.31 |
| City dumps..................... | 60,000.00 | 58,524.67 | 1,475.33 |
| Rental of ward yards........... | 7,500.00 | 6,737.37 | 762.63 |
| Cleaning right of way of street car companies................ | 150,000.00 | 34,352.25 | 115,647.75 |
| Unpaid bills of 1908............. | 2.419.24 | 2,419.24 | ............ |
| General corporation and sub-corporation inspectors ........... | 50,000.00 | 39.724.33 | 10,275.67 |
| Restoration of streets where excavations have been made by plumbers, sewer builders and others, by permit............. | 75,000.00 | 48,917.60 | 26,082.40 |
| Repairs and maintenance of waste paper boxes.................. | 2,000.00 | 1,748.71 | 251.29 |
| Repairing improved and unimproved streets and sidewalks.. | 102,720.94 | 99,311.50 | 3,409.44 |
| Vehicle tax fund: | | | |
| Collections during the year 1909 amounting to:<br>Repairing macadam paved streets ...........$102,400.44<br>By additional collections available ... 99,631.63 | 202,032.07 | 202,032.07 | ............ |
| Carried forward .............. | $ 3,551,617.71 | $ 3,257,903.15 | $ 293,714.56 |

## CORPORATE FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 3,551,617.71 | $ 3,257,903.15 | $ 293,714.56 |
| **BUREAU OF STREETS—Continued:** | | | |
| Repairing asphalt paved streets | 125,610.11 | 125,610.11 | ............ |
| Repairing brick paved streets ... $20,440.66<br>By additional collections available ... 5,618.47 | 26,059.13 | 26,059.13 | ............ |
| Repairing cedar block pavements ... $10,000.00<br>By additional collections available ... 10,231.85 | 20,231.85 | 20,231.85 | ............ |
| Repairing granite block pavements | 83,949.23 | 83,949.23 | ............ |
| Repairing creosoted block pavements | 2,337.13 | 2,337.13 | ............ |
| Unpaid bills of 1908 | 24,135.16 | 24,135.16 | ............ |
| Ditching in various wards | 15,000.00 | 5,074.36 | 9,925.64 |
| Subway at Ashland ave. and 49th st.—City's proportion ... $6,000.00<br>By Ordinance, June 14, 1909 ... 7,000.00 | 13,000.00 | ............ | 13,000.00 |
| Repairs to 12th st. viaduct—to be refunded by railroad companies | 40,000.00 | 15,110.24 | 24,889.76 |
| Breakwater at Graceland ave. and Bittersweet place | 2,700.00 | ............ | 2,700.00 |
| **COMPENSATION BUREAU:** | | | |
| Salaries | 4,300.00 | 4,300.00 | ............ |
| Expenses | 500.00 | 189.57 | 310.43 |
| **BUREAU OF SEWERS:** | | | |
| Office Salaries | 12,779.00 | 12,778.97 | .03 |
| Office expenses ... $1,000.00<br>Less Transfer Council order, Nov. 29, 1909 ... 500.00 | 500.00 | 423.02 | 76.98 |
| Street car and railroad transportation ... $2,000.00<br>Less transfer, Council order, Nov. 29, 1909 ... 400.00 | 1,600.00 | 1,502.80 | 97.20 |
| Unpaid bills of 1908 | 175.30 | 175.30 | ............ |
| Pumping Stations—Operation: | | | |
| 69th st. pumping station—unpaid bill for power | 8,297.73 | 8,297.73 | ............ |
| 95th st. pumping station: | | | |
| Salaries | 12,555.00 | 10,913.41 | 1,641.59 |
| Coal ... $6,000.00<br>Less transfer, Council order, Nov. 29, 1909 ... 2,000.00 | 4,000.00 | 2,749.47 | 1,250.53 |
| Carried forward | $3,949,347.35 | $3,601,740.63 | $347,606.72 |

## CORPORATE FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward ............ | $3,949,347.35 | $3,601,740.63 | $ 347,606.72 |
| **BUREAU OF SEWERS—Continued:** | | | |
| **Pumping Stations—Operation:** | | | |
| 95th st. pumping station: | | | |
| Supplies ............$2,000.00<br>Less transfer, Council order, Nov. 29, 1909 200.00 | 1,800.00 | 1,796.72 | 3.28 |
| Hegewisch pumping station: | | | |
| Salaries ............$1,800.00<br>Less transfer, Council order, Nov. 29, 1909. 1,200.00 | 600.00 | 397.71 | 202.29 |
| Coal ............$ 400.00<br>Less transfer, Council order, Nov. 29, 1909. 200.00 | 200.00 | 63.92 | 136.08 |
| Supplies ................ | 250.00 | 101.84 | 148.16 |
| Kensington pumping station: | | | |
| Salaries .................. | 7,063.00 | 6,972.96 | 90.04 |
| Coal ...................... | 2,139.26 | 1,841.62 | 297.64 |
| Supplies ............$ 700.00<br>Less transfer, Council order, Nov. 29, 1909. 200.00 | 500.00 | 496.90 | 3.10 |
| Pullman pumping station: | | | |
| Salaries .................. | 7,063.00 | 6,852.05 | 210.95 |
| Coal ............$2,592.00<br>Less transfer, Council order, Nov. 29, 1909. 500.00 | 2,092.00 | 1,586.71 | 505.29 |
| Supplies ............$1,000.00<br>Less transfer, Council order, Nov. 29, 1909. 500.00 | 500.00 | 401.66 | 98.34 |
| Jackson P'k ave. pumping station: | | | |
| Salaries .................. | 12,555.00 | 12,506.13 | 48.87 |
| Coal ............$6,302.65<br>Less transfer, Council order, Nov. 29, 1909. 1,800.00 | 4,502.65 | 3,345.51 | 1,157.14 |
| Supplies ............$2,000.00<br>Less transfer, Council order, Nov. 29, 1909. 1,200.00 | 800.00 | 680.10 | 119.90 |
| Temporary pumping at 95th st. sewer system ............... | 10,510.50 | 10,510.50 | ............ |
| **Pumping Stations — Repairs and Renewals:** | | | |
| 95th st. pumping station.$2,000.00<br>Less transfer, Council order, Nov. 29, 1909. 1,600.00 | 400.00 | 359.39 | 40.61 |
| Carried forward ............ | $4,000,322.76 | $3,649,654.35 | $350,668.41 |

## CORPORATE FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward ............ | $4,000,322.76 | $3,649,654.35 | $ 350,668.41 |
| BUREAU OF SEWERS—Continued | | | |
| Pumping Stations — Repairs and Renewals: | | | |
| Hegewisch pumping station..... | 50.00 | ............ | 50.00 |
| Kensington pumping station . . . ............ $2,500.00<br>Less transfer, Council order, Nov. 29, 1909. 1,600.00 | 900.00 | 596.06 | 303.94 |
| Pullman pumping station . . . ............ $2,500.00<br>Less transfer, Council order, Nov. 29, 1909. 800.00 | 1,700.00 | 1,139.01 | 560.99 |
| Jackson Park Ave. pumping station .......... $4,500.00<br>Less transfer, Council order, Nov. 29, 1909. 2,200.00<br>Less transfer, Council order, Dec. 7, 1909.. 2,000.00 | 300.00 | 297.81 | 2.19 |
| Woodlawn pumping station—unpaid bill, 1908................. | 722.00 | 722.00 | ............ |
| Repairing sewers, salaries . . . .......... $56,000.00<br>By ordinance, Nov. 8, 1909 ............ 3,200.00<br>By transfer, Council order, Nov. 29, 1909 400.00 | 59,600.00 | 59,582.58 | 17.42 |
| Building new catch basins...... | 5,000.00 | 4,957.00 | 43.00 |
| Repairing sewers, other ........ | 7,000.00 | 6,941.49 | 58.51 |
| Repairing catch basins, salaries . . . ........ $22,400.00<br>By transfer, Council order, Nov. 29, 1909. 1,000.00 | 23,400.00 | 23,395.78 | 4.22 |
| Repairing catch basins, other . . . .......... $ 5,000.00<br>By ordinance, Nov. 8, 1909 .............. 1,800.00 | 6,800.00 | 6,097.36 | 702.64 |
| Bench monuments, salaries...... | 2,880.00 | 2,820.00 | 60.00 |
| New bench monuments.......... | 800.00 | 799.98 | .02 |
| Restoration of streets .......... | 3,000.00 | 2,849.97 | 150.03 |
| Restoration of streets..........<br>Miscellaneous work..$ 1,500.00<br>Additional work on deposit, unappropriated . . . .......... 944.20 | 2,444.20 | 2,444.20 | ............ |
| House drains, salaries. $45,611.00<br>Less transfer, Council order, Nov. 29, 1909 2,200.00 | 43,411.00 | 43,390.65 | 20.35 |
| Carried forward ............. | $ 4,158,329.96 | $ 3,805,688.24 | $ 352,641.72 |

## CORPORATE FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 4,158,329.96 | $ 3,805,688.24 | $ 352,641.72 |
| BUREAU OF SEWERS–Continued: | | | |
| House drains, other....$ 1,000.00<br>Less transfer, Council order, Nov. 29, 1909 500.00 | 500.00 | 431.60 | 68.40 |
| Cleaning sewers, salaries ...........$203,000.00<br>By ordinance, Nov. 8, 1909 ........... 10,000.00<br>By transfer Council order, Nov. 29, 1909 15,200.00 | 228,200.00 | 227,623.14 | 576.86 |
| Cleaning sewers, other | 5,520.00 | 4,080.17 | 1,439.83 |
| Repairing sewers in Canal place. | 550.36 | 472.47 | 77.89 |
| CITY HALL: | | | |
| Repairs and renewals | 3,000.00 | 2,990.93 | 9.07 |
| Unpaid bills of 1908 | 1,692.75 | 1,662.75 | 30.00 |
| Operation: | | | |
| Salaries | 11,801.55 | 11,650.52 | 151.03 |
| Miscellaneous | 16,000.00 | 15,960.75 | 39.25 |
| Rent of temporary quarters for City offices | 134,445.04 | 131,779.82 | 2,665.22 |
| Operators for telephone switch board ....$3,950.00<br>By ordinance, Nov. 8, 1909 ........... 2,915.00 | 6,865.00 | 6,865.00 | ............ |
| Total ordinary accounts... | $4,566,904.66 | $4,209,205.39 | $ 357,699.27 |

## TABLE No. II.

## STATEMENT OF APPROPRIATIONS AND EXPENDITURES FOR THE YEAR 1909—CORPORATE FUND, EXTRAORDINARY ACCOUNTS.

| EXTRAORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| BUREAU OF BRIDGES AND HARBOR: | | | |
| California ave. bridge | $ 10,000.00 | ............ | $ 10,000.00 |
| Indiana st. bridge (plans) | 5,000.00 | $ 3,041.71 | 1,958.29 |
| Kinzie st. double deck bascule bridge | 60,000.00 | 60,000.00 | ............ |
| Erie St. bridge | 147,977.82 | 147,202.01 | 775,81 |
| Polk st. bridge | 149,819.16 | 118,038.69 | 31,780.47 |
| Rent of ground, Polk st. bridge | 375.00 | ............ | 375.00 |
| Washington st. bridge. $160,000.00<br>Less transfer, Council order, Nov. 29, 1909 . . . 75,000.00<br>Less transfer, Council order, Dec. 20, 1909 . . . 50,000.00 | 35,000.00 | ............ | 35,000.00 |
| 35th st. bridge, including temporary bridge and rock excavations | 20,000.00 | 867.32 | 19,132.68 |
| Gates and signal lights for movable bridges | 2,500.00 | 2,500.00 | ............ |
| Kedzie ave. bridge (Illinois and Michigan Canal), including temporary bridge | 25,000.00 | 22,806.86 | 2,193.14 |
| Kedzie ave. bridge (south branch, reinforcement) | 7,000.00 | 2,464.90 | 4,535.10 |
| Reinforcing Lawrence ave. bridge and building new approaches | 12,000.00 | 9,958.73 | 2,041.27 |
| Ferry at 100th st. (Calumet River) | 2,000.00 | ............ | 2,000.00 |
| Culverts and reinforcements, including bridge over the Illinois and Michigan Canal at Ashland avenue | 16,548.10 | 16,407.78 | 140.32 |
| Removal of Fuller st. bridge | 6,000.00 | 3,499.85 | 2,500.15 |
| 92nd st. bridge, including temporary structure | 26,503.77 | 6,775.12 | 19,728.65 |
| La Salle st. bridge (plans) | 4,673.84 | 1,053.94 | 3,619.90 |
| BUREAU OF STREETS: | | | |
| Fifty sprinkling wagons | 13,850.00 | 13,750.00 | 100.00 |
| Docks and loading stations | 1,325.00 | 1,325.00 | ............ |
| Forty-one street flushers | 32,500.00 | 32,390.00 | 110.00 |
| Purchase of site for 33rd ward yard | 1,500.00 | ............ | 1,500.00 |
| BUREAU OF SEWERS: | | | |
| 95th st. pumping station—installing boilers for temporary use | 470.00 | 470.00 | ............ |
| 95th st. pumping station—housing over pump No. 3 | 960.00 | 960.00 | ............ |
| Carried forward | $ 581,002.69 | $ 443,511.91 | $ 137,490.78 |

## CORPORATE FUND, EXTRAORDINARY ACCOUNTS—Continued.

| EXTRAORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward ............. | $ 581,002.69 | $ 443,511.91 | $ 137,490.78 |
| BUREAU OF SEWERS—Continued: | | | |
| 96th st. pumping station —boilers, boiler house, smoke stack, etc.....$19,877.25<br>By ordinance, May 24, 1909 ........ 5,400.00 | 25,277.25 | 23,160.99 | 2,116.26 |
| Building outlet to Wentworth ave. sewer (600 feet) ............... | 5,000.00 | ............. | 5,000.00 |
| Connecting sewers in Armour ave. and Dearborn st. across Garfield blvd. .................... | 1,400.00 | 14.92 | 1,385.08 |
| CITY HALL: | | | |
| New City Hall .....$1,136,514.70<br>By transfer, Council order, Nov. 29, 1909 ........... 75,000.00<br>By additional work, vouchered, unappropriated ..... 6,134.69 | 1,217,649.39 | 1,217,649.39 | ............ |
| SUBWAYS: | | | |
| Salaries and expenses..$50,000.00<br>By transfer, Council order, Dec. 20, 1909. 50,000.00 | 100,000.00 | 67,843.56 | 32,156.44 |
| Total extraordinary accounts. | $1,930,329.33 | $1,752,180.77 | $ 178,148.56 |

## TABLE No. III.

## STATEMENT OF APPROPRIATIONS AND EXPENDITURES FOR THE YEAR 1909—CORPORATE FUND, SUMMARY OF ORDINARY AND EXTRAORDINARY ACCOUNTS.

| | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| ORDINARY ACCOUNTS: | | | |
| Commissioner's office (10%) | $ 5,557.00 | $ 4,913.75 | $ 643.26 |
| Bureau of Maps and Plats (25%) | 11,264.08 | 10,018.93 | 1,245.15 |
| City Architect's office | 15,338.00 | 13,588.42 | 1,749.58 |
| Bureau of Bridges and Harbor | 624,608.92 | 524,249.34 | 100,359.58 |
| Bureau of Streets | 3,252,672.32 | 3,012,129.49 | 240,542.83 |
| Bureau of Sewers | 483,660.00 | 473,395.69 | 10,264.31 |
| City Hall | 173,804.34 | 170,909.77 | 2,894.57 |
| Total Ordinary Accounts | $4,566,904.66 | $4,209,205.39 | $357,699.27 |
| EXTRAORDINAY ACCOUNTS: | | | |
| Bureau of Bridges and Harbor | $ 530,397.69 | $ 394,616.91 | $ 135,780.78 |
| Bureau of Streets | 49,175.00 | 47,465.00 | 1,710.00 |
| Bureau of Sewers | 33,107.25 | 24,605.91 | 8,501.34 |
| City Hall | 1,217,649.39 | 1,217,649.39 | ............ |
| Subways | 100,000.00 | 67,843.56 | 32,156.44 |
| Total Extraordinary Accounts | $1,930,329.33 | $1,752,180.77 | $178,148.56 |
| Total Ordinary and Extraordinary Accounts: | | | |
| Commissioner's office | $ 5,557.00 | $ 4,913.75 | $ 643.25 |
| Bureau of Maps and Plats | 11,264.08 | 10,018.93 | 1,245.15 |
| City Architect's office | 15,338.00 | 13,588.42 | 1,749.58 |
| Bureau of Bridges and Harbor | 1,155,006.61 | 918,866.25 | 236,140.36 |
| Bureau of Streets | 3,301,847.32 | 3,059,594.49 | 242,252.83 |
| Bureau of Sewers | 516,767.25 | 498,001.60 | 18,765.65 |
| City Hall | 1,391,453.73 | 1,388,559.16 | 2,894.57 |
| Subways | 100,000.00 | 67,843.56 | 32,156.44 |
| Grand Total | $6,497,233.99 | $5,961,386.16 | $535,847.83 |

## TABLE No. IV.

### STATEMENT OF EXPENDITURES OF BUREAU OF STREETS DURING THE YEAR 1909.

| | | |
|---|---|---|
| GENERAL SUPERINTENDENCE: | | |
| Office salaries and expenses | $ 29,131.42 | |
| Salaries of Ward Superintendents | 79,126.82 | $ 108,258.24 |
| CLEANING STREETS: | | |
| Salaries and teams | $ 802,075.24 | |
| Miscellaneous expenses | 20,223.74 | |
| By Citizens' Street Cleaning Bureau (City reimbursed $13,401.71) | 49,401.71 | 871,700.69 |
| ORDINARY GARBAGE, ASHES, RUBBISH, ETC.: | | |
| Collection — Salaries and teams | $ 704,104.75 | |
| Dumps — Salaries and expenses | 58,524.67 | 762,629.42 |
| PURE GARBAGE: | | |
| Collection — Salaries and teams | $ 364,996.14 | |
| Docks and Loading Stations — Salaries and expenses | 40,218.86 | |
| Operation of tugs and scows, and maintenance of wagons, etc | 16,739.48 | |
| Reduction | 47,499.99 | 469,454.47 |
| SNOW REMOVAL AND MAINTENANCE OF SNOW DUMPS | | 50,916.21 |
| MAINTENANCE OF WASTE PAPER BOXES | | 1,748.71 |
| CLEANING RIGHT-OF-WAY OF STREET CAR COMPANIES (City reimbursed) | | 34,352.25 |
| RENTAL OF WARD YARDS | | 6,737.37 |
| UNPAID BILLS OF 1908 | | 2,419.24 |
| STREET OPENINGS AND OBSTRUCTIONS: | | |
| General corporation and sub-corporation inspectors (City reimbursed) | $ 39,724.33 | |
| Inspectors of street openings | 6,930.61 | |
| Restoration of streets opened by permits (City reimbursed) | 48,917.60 | 95,572.54 |
| STREET REPAIRS: | | |
| Macadam | $ 202,032.07 | |
| Asphalt | 148,326.27 | |
| Granite block | 83,949.23 | |
| Brick | 26,059.13 | |
| Cedar block | 21,650.85 | |
| Creosoted block | 2,337.13 | |
| Miscellaneous — Improved and unimproved streets and sidewalks | 99,311.50 | |
| Ditching in various wards | 5,074.36 | |
| Repairs to 12th Street Viaduct — to be Refunded by R. R. Co | 15,110.24 | 603,850.78 |
| EXTRAORDINARY: | | |
| 50 Sprinkling Wagons | $ 13,750.00 | |
| Docks and Loading Stations | 1,325.00 | |
| 41 Street Flushers | 32,390.00 | 47,465.00 |
| Total | | $3,055,104.92 |

## TABLE No. V.

### DETAILED STATEMENT OF WARD EXPENDITURES OF BUREAU OF STREETS FOR THE YEAR 1909.

| WARDS | Cleaning Streets. Salaries. | Cleaning Streets, Other. | Collection of Ashes, Refuse and Ordinary Garbage. | Collection of Pure Garbage. | Repairing Improved Streets. | Repairing Unimproved Streets. | Repairing Sidewalks. | Miscellaneous. | Total. | Per Cent. |
|---|---|---|---|---|---|---|---|---|---|---|
| First . . . . . . . . . . . . | $161,203.93 | $ 4.071.10 | $ 27,274.50 | $ 3.342.00 | $ 2,937.08 | . . . . . . . . . | $ 108.25 | $ 1,051.60 | $ 199,988.46 | 10.0 |
| Second . . . . . . . . . . | 26,294.75 | 281.97 | 22,862.42 | 9,515.00 | 873.50 | . . . . . . . . . | . . . . . . . . . | 651.88 | 60,479.52 | 3.0 |
| Third . . . . . . . . . . | 25.422.76 | 361.23 | 21,008.00 | 10,632.25 | 1,223.18 | . . . . . . . . . | 14.50 | 391.91 | 59,053.83 | 3.0 |
| Fourth . . . . . . . . . . | 15,681.12 | 618.61 | 13,237.38 | 8,765.87 | 631.38 | . . . . . . . . . | 18 00 | 918.65 | 39,871.01 | 2.0 |
| Fifth . . . . . . . . . . | 15,845.75 | 331.86 | 11,339.75 | 8,359.00 | 662.25 | $ 1,767.25 | 680.50 | 755.87 | 39,742.23 | 2.0 |
| Sixth . . . . . . . . . . | 23,463.27 | 307,76 | 30,506.25 | 17,973.00 | 1,631.45 | 23.75 | . . . . . . . . . | 514.16 | 74,419.64 | 3.7 |
| Seventh . . . . . . . . . | 25,445.37 | 780.85 | 28,007.75 | 17,742.50 | 1,612.13 | . . . . . . . . . | 83.00 | 974.48 | 74.646.08 | 3.7 |
| Eighth . . . . . . . . . . | 8,618.50 | 153.28 | 16,294.00 | . . . . . . . . . . | 628.50 | 4,290.13 | 1,448.50 | 2.228.13 | 33,661.04 | 1,7 |
| Ninth . . . . . . . . . . | 18,037.13 | 1.444.44 | 15,841.87 | 8,519.00 | 129.50 | . . . . . . . . . | 3.50 | 562.71 | 44,538.15 | 2.2 |
| Tenth . . . . . . . . . . | 18.786.00 | 1.342.22 | 14,742.50 | 7,533.00 | 652.00 | . . . . . . . . . | 130.00 | 1,257.06 | 44,442.78 | 2.2 |
| Eleventh . . . . . . . . | 17,627.00 | 1,335.30 | 15,400.25 | 7,784.00 | 454.75 | . . . . . . . . . | 1,308.25 | 678.99 | 44,588.54 | 2.2 |
| Twelfth . . . . . . . . . | 15,392.25 | 55.10 | 14,958.25 | 10,334.25 | 2,095.00 | . . . . . . . . . | 847.50 | 860.87 | 44,543.22 | 2.2 |
| Thirteenth . . . . . . . | 20,947.82 | 88.09 | 19,063.00 | 14,016.75 | 1,026.00 | 14.50 | 63.50 | 1,762.39 | 56,982.05 | 2.8 |
| Fourteenth . . . . . . | 17.390.38 | 281.85 | 19,574.75 | 10,341.25 | 239.75 | 42.00 | 32.50 | 659.24 | 48,561.72 | 2.4 |
| Fifteenth . . . . . . . . | 17.915.63 | 179.81 | 17,138.87 | 11,141.88 | 1,116.00 | 856.50 | 106.00 | 820.38 | 49,275.07 | 2.5 |
| Sixteenth . . . . . . . . | 21,324.87 | 143.12 | 15,087.50 | 9,784.75 | 1,212.50 | 58.75 | 133.00 | 1.260.57 | 49,005.06 | 2.5 |
| Seventeenth . . . . . | 19,804.38 | 171.06 | 21,020.87 | 9,833.75 | 487.13 | . . . . . . . . . | 70.00 | 842.92 | 52,230.11 | 2.6 |
| Eighteenth . . . . . . | 41,082.88 | 1.551.77 | 15,763.37 | 4,313.00 | 444.18 | . . . . . . . . . | 40.13 | 1,288.75 | 64,484.08 | 3.2 |
| Nineteenth . . . . . . | 23,415.37 | 1.631.04 | 26,016.25 | 6.659.25 | 18.75 | 2.50 | 32.25 | 471.51 | 58,246.92 | 2.9 |
| Twentieth . . . . . . . | 15,636.25 | 1.386.89 | 30,184.75 | 17,076.50 | 285.25 | . . . . . . . . . | . . . . . . . . . | 346.10 | 64,915.74 | 3.4 |
| Twenty-first . . . . . | 26,592.51 | 654.63 | 30,488.25 | 7.778.75 | 332.68 | . . . . . . . . . | 10.00 | 1,085.15 | 66,941.97 | 3.4 |
| Twenty-second . . . | 24,061.27 | 474.18 | 23,123.00 | 6,872.25 | 403.42 | 326.00 | 99.82 | 1,180.97 | 56,540.91 | 3.0 |
| Twenty-third . . . . | 16.585.51 | 151.64 | 20,908.24 | 10,443.50 | 586.25 | . . . . . . . . . | 11.68 | 1,218.70 | 49,905.52 | 2.5 |
| Twenty-fourth . . . | 15.096.25 | 329.62 | 17,298.00 | 11,330.75 | 481.51 | 878.75 | 14.00 | 505.33 | 45,934.21 | 2.3 |
| Twenty-fifth . . . . . | 15,217.75 | 343.47 | 32.810.50 | 28,191.25 | 945.50 | . . . . . . . . . | 2.00 | 707.43 | 78,217.90 | 4.0 |
| Twenty-sixth . . . . . | 17,562.51 | 331.82 | 25.577.50 | 18,164.00 | 475.88 | 1,447.99 | 225.00 | 2,123.26 | 65,907.96 | 3.3 |
| Twenty-seventh . . | 19,869.40 | 274.17 | 14,313.49 | 8.825.00 | 1,690.46 | 2.918.61 | 418.37 | 4.700.08 | 53,009.58 | 2.7 |
| Twenty-eighth . . . | 18,234.62 | 247.13 | 16.087.25 | 12,134.26 | 994.50 | 494.50 | 17.00 | 513.32 | 48,722.58 | 2.4 |
| Twenty-ninth . . . . | 15,272.88 | 154.41 | 14,771.37 | 7,031.50 | 843.75 | 3,650.38 | 275.25 | 1,624.34 | 43.623.88 | 2.2 |
| Thirtieth . . . . . . . . | 18.205.37 | 297.49 | 18.385.62 | 9,768.50 | 511.25 | 419.00 | 7.00 | 1,234.11 | 48,828.34 | 2.4 |
| Thirty-first . . . . . . | 11,025.13 | 100.21 | 22,050.25 | 10,706.38 | 1.677.75 | 815.50 | . . . . . . . . . | 776.24 | 47,151.46 | 2.4 |
| Thirty-second . . . . | 14,927.89 | 98.33 | 22,384.75 | 12,733.00 | 785.88 | 546.49 | 91.00 | 1,246.66 | 52,814.00 | 2.6 |
| Thirty-third . . . . . | 15,060.98 | 199.61 | 21,690.75 | . . . . . . . . . . | 524.25 | 2,994.64 | 445.26 | 2,602.07 | 43,517.56 | 2.2 |
| Thirty-fourth . . . . | 14,496.63 | 43.50 | 16,455.25 | 11,734.38 | 669.50 | 420.63 | 76.00 | 439.21 | 44,335.10 | 2.3 |
| Thirty-fifth . . . . . . | 10,531.13 | 6.18 | 12,438.25 | 15,615.62 | 709.06 | 1,669.62 | 57.25 | 558.04 | 41,585.15 | 2.1 |
| Total . . . . . . . | $802,075.24 | $20,223.74 | $704,104.75 | $364,996.14 | $29,991.92 | $23.637.49 | $6,869.01 | $38,813.08 | $1,990,711.37 | 100.% |

## TABLE No. VI.

## DETAILED STATEMENT OF EXPENDITURES BY WARDS FROM VEHICLE TAX FUND FOR REPAIR OF IMPROVED STREETS FOR THE YEAR 1909.

| WARDS | Asphalt | Macadam | Granite | Brick | Cedar Block | Creosoted Block | Total | Per Cent |
|---|---|---|---|---|---|---|---|---|
| First | $ 6,676.21 | $ 1,084.07 | $ 38,651.18 | | $ 148.35 | $2,337.13 | $ 48,896.94 | 10.1 |
| Second | 5,091.36 | 4,579.67 | 3,579.94 | $ 2,254.77 | 611.91 | | 16,117.65 | 3.3 |
| Third | 5,117.35 | 4,134.94 | | 1,278.85 | 3,280.87 | | 13.812.01 | 2.9 |
| Fourth | | 2,791.38 | 4.878.17 | 1,991.00 | 1,447.59 | | 11,108.14 | 2.3 |
| Fifth | | 5,610.63 | 792.30 | | 114.82 | | 6,517.75 | 1.3 |
| Sixth | 2,170.74 | 12,169.66 | | | | | 14.340.40 | 3.0 |
| Seventh | 17,074.85 | 17,166.13 | 6,202.08 | 14.85 | 9.68 | | 40.467.59 | 8.4 |
| Eighth | | 9.573.30 | | | | | 9,573.30 | 1.9 |
| Ninth | | 99.00 | | | 4.84 | | 103.84 | |
| Tenth | | 1,217.00 | 3,121.81 | | 9.67 | | 4,348.48 | .9 |
| Eleventh | 79.91 | 1,489.00 | | 1,710.40 | | | 3,279.31 | .7 |
| Twelfth | 575.10 | 3,544.25 | 36.80 | 8.25 | 63.68 | | 4,228.08 | .9 |
| Thirteenth | 20,746.82 | 4.347.76 | 10.00 | 147.30 | 947.78 | | 26,199.66 | 5.4 |
| Fourteenth | 5,431.42 | 3.391.14 | | 1,257.45 | 712.34 | | 10,792.35 | 2.2 |
| Fifteenth | 1,201.58 | 2,388.05 | | 24.75 | 559.42 | | 4,173.80 | .9 |
| Sixteenth | | 2,504.56 | | 10,265.41 | 33.00 | | 12,802.97 | 2.6 |
| Seventeenth | 188.07 | 254.00 | 8.25 | 534.42 | 3,228.77 | | 4,213.51 | .9 |
| Eighteenth | 1,697.35 | 422.37 | 13,291.61 | 2.332.36 | 204.87 | | 17,948.56 | 3.7 |
| Nineteenth | | 91.25 | 583.37 | 2,098.93 | 9.67 | | 2,783.22 | .6 |
| Twentieth | 14,419.90 | 1,040.93 | | 982.10 | 87.08 | | 16,530.01 | 3.4 |
| Twenty-first | 7,104.04 | 390.54 | 3,486.50 | 492.13 | 362.20 | | 11,835.41 | 2.4 |
| Twenty-second | 526.46 | 478.47 | 2,176.34 | 413.05 | 104.36 | | 3,698.68 | .8 |
| Twenty-third | 1,268.18 | 1,456.23 | | | | | 2,724.41 | .5 |
| Twenty-fourth | 42.25 | 908.35 | | | 386.06 | | 1,336.66 | .3 |
| Twenty-fifth | | 17.161.80 | | 27.68 | 78.52 | | 17.268.00 | 3.5 |
| Twenty-sixth | 35.61 | 7,579.09 | | 21.45 | 106.42 | | 7,742.57 | 1.6 |
| Twenty-seventh | 419.64 | 27,187.24 | | | 148.35 | | 27,755.23 | 5.7 |
| Twenty-eighth | | 4,940.74 | | 9.00 | 759.22 | | 5,708.96 | 1.2 |
| Twenty-ninth | | 6,359.71 | | | 852.61 | | 6,712.32 | 1.4 |
| Thirtieth | | 6,196.90 | 6,437.22 | | 4,962.64 | | 17,596.76 | 3.6 |
| Thirty-first | | 5,233.23 | | 6.19 | 64.50 | | 5,303.92 | 1.1 |
| Thirty-second | | 31,688.00 | 185.50 | | 2,363.02 | | 34,236.52 | 7.1 |
| Thirty-third | 463.59 | 11,414.27 | | 100.00 | | | 11,977.86 | 2.5 |
| Thirty-fourth | 22.357.43 | 2.799.26 | | 20.21 | 456.26 | | 25,683.16 | 5.3 |
| Thirty-fifth | 6,444.71 | 7,704.68 | | | 4.84 | | 14,154.23 | 2.9 |
| General | 6,477.54 | 15,350.63 | 508.16 | 68.58 | 27.51 | | 22,432.42 | 4.6 |
| **Total** | $125,610.11 | $224.748.23 | $ 83,949.28 | $26,059.13 | $21,650.85 | $2.337.13 | $484,354.68 | 100.0 |

## TABLE No. VII.

## STATEMENT OF EXPENDITURES OF BUREAU OF SEWERS DURING THE YEAR 1909.

| | | |
|---|---|---|
| GENERAL SUPERINTENDENCE: | | |
| Office Salaries and Expenses | $ 14,704.79 | |
| Unpaid bills of 1908 | 175.30 | $ 14,880.09 |
| PUMPING STATIONS—OPERATION: | | |
| Salaries | $ 37,642.26 | |
| Fuel and Supplies | 13,064.45 | |
| Temporary Pumping—95th st. Sewer System | 10,510.50 | |
| Unpaid bill for power—69th st. Pumping Station | 8,297.73 | 69,514.94 |
| PUMPING STATIONS—REPAIRS AND RENEWALS | | 3,114.27 |
| PUMPING STATIONS—CONSTRUCTION AND BETTERMENTS | | 24,590.99 |
| CLEANING SEWERS: | | |
| Salaries | $227,623.14 | |
| Supplies | 4,080.17 | 231,703.31 |
| REPAIRING SEWERS: | | |
| Salaries | $ 59,582.58 | |
| Other | 6,941.49 | 66,524.07 |
| CATCH BASINS—REPAIRS AND RENEWALS: | | |
| Salaries | $ 28,352.78 | |
| Other | 6,097.36 | 34,450.14 |
| BENCH MONUMENTS—SALARIES AND OTHER | | 3,619.98 |
| INSPECTION OF HOUSE DRAINS: | | |
| Salaries | $ 43,390.65 | |
| Other | 431.60 | 43,822.25 |
| RESTORATION OF STREETS | | 5,294.17 |
| Connecting Sewers in Armour Ave. and Dearborn St. across Garfield blvd | | 14.92 |
| REPAIRING SEWERS IN CANAL PLACE | | 472,47 |
| Total | | $498,001.60 |

## TABLE No. VIII.

## SEWERAGE PUMPING STATIONS.

### DETAILED STATEMENT OF EXPENDITURES FOR OPERATION AND REPAIRS FOR THE YEAR 1909.

| PUMPING STATIONS | OPERATION | | | | Repairs | TOTAL |
|---|---|---|---|---|---|---|
| | Salaries | Coal | Supplies and Miscellaneous | Total Operation | | |
| Stony Island Ave. Pumping Station | $12.506.13 | $3,345.51 | $ 680.10 | $16,531.74 | $ 297.81 | $16,829.55 |
| Pullman Pumping Station | 6,852.05 | 1,586.71 | 401.66 | 8,840.42 | 1,139.01 | 9,979 43 |
| Kensington Pumping Station | 6,972.96 | 1,841 62 | 496.90 | 9,311 48 | 596.06 | 9,907.54 |
| 95th Street Pumping Station | 10 913.41 | 2,749.47 | 1.796.72 | 15,459.60 | 359.39 | 15,818.99 |
| Hegewisch Pumping Station | 397.71 | 63.92 | 101.84 | 563.47 | ........ | 563 47 |
| Total | $37.642.26 | $9.587.23 | $3,477.22 | $50,706.71 | $2,392 27 | $53,098 98 |
| 69th Street Pumping Station—Unpaid bill for power | | | | | | 8,297.73 |
| Temporary pumping—95th Street sewer system | | | | | | 10,510.50 |
| Woodlawn Pumping Station—Unpaid bill | | | | | | 722.00 |
| Total | | | | | | $72.629.21 |

**Note:** See Table No. XIX and Table No. XX for intercepting sewer pumping stations, expense of which is borne by water fund.

## TABLE No. IX.

### STATEMENT OF EXPENDITURES OF BUREAU OF BRIDGES, HARBOR AND VIADUCTS DURING THE YEAR 1909.

| | | |
|---|---|---|
| **GENERAL SUPERINTENDENCE:** | | |
| Office Salaries and Expenses | | $ 6,630.27 |
| **BRIDGE OPERATION:** | | |
| Salaries | $168,472.47 | |
| Electric Power | 10,900.00 | |
| Fuel | 4,111.05 | |
| Supplies | 3,825.47 | |
| Operation of Ferries | 3,857.80 | 191,166.79 |
| **BRIDGES AND VIADUCTS — REPAIRS AND RENEWALS:** | | |
| Salaries | $150,035.98 | |
| Material | 77,249.03 | |
| Repairing Viaducts on Account Railroad Companies (City to be reimbursed) | 13,453.30 | |
| Repairing Damaged Bridges (City to be reimbursed) | 14,803.81 | |
| Repairing Pile Constructions | 266.66 | |
| Reconstruction of Heel Locks and Brakes | 4,502.00 | |
| Repainting Bridges | 15,067.80 | |
| Repairs to Madison St. Bridge (City to be reimbursed) | 20,363.40 | 295,741.98 |
| **BRIDGE CONSTRUCTION:** | | |
| Indiana Street Bridge (plans) | $ 3,041.71 | |
| Kinzie Street Bridge | 60,000.00 | |
| Erie Street Bridge | 147,202.01 | |
| Polk Street Bridge | 118,038.69 | |
| 35th Street Bridge (plans) | 867.32 | |
| Gates and Signal Lights | 2,500.00 | |
| Kedzie Avenue Bridge | 25,271.76 | |
| Reinforcing Lawrence Avenue Bridge | 9,958.73 | |
| Culverts and reinforcements including Bridge over I. & M. Canal at Ashland Avenue | 16,407.78 | |
| Removal of Fuller St. Bridge | 3,499.85 | |
| 92nd St. Bridge (plans) | 6,775.12 | |
| LaSalle St. Bridge (plans) | 1,053.94 | 394,616.91 |
| **RIVERS AND HARBORS:** | | |
| Salaries | $ 16,944.54 | |
| Removal of Sunken Vessels and other Obstructions | 478.04 | |
| Protection of Street Ends and Public Ways | 8,613.72 | |
| Repairs to Vessel Dispatcher's Office | 4.39 | |
| Operation and Maintenance of Harbor Launches | 68.32 | |
| Lighting Vessel Dispatcher's Office | 49.39 | |
| Inspection and Engineering for Corporations (City reimbursed) | 3,718.40 | |
| Bonds for Bridge Tenders, Harbor Masters, etc. | 833.50 | 30,710.35 |
| Total | | $918,866.20 |

## TABLE No. X.

### STATEMENT OF EXPENDITURES FOR RENT AND EQUIPMENT OF TEMPORARY QUARTERS, REMOVAL OF CITY OFFICES AND CONSTRUCTION OF NEW CITY HALL.

| | 1907 | 1908 | 1909 | TOTAL |
|---|---|---|---|---|
| TEMPORARY QUARTERS: | | | | |
| Rent of temporary quarters | $ 3,836.41 | $ 91,757.63 | $ 149,094.75 | $ 244,688.79 |
| Removal of City offices and equipment of temporary quarters | ............ | 131,336.29 | ............ | 131,336.29 |
| Total | $ 3,836.41 | $223,093.92 | $ 149,094.75 | $ 376,025.08 |
| CONSTRUCTION OF NEW CITY HALL: | | | | |
| Holabird & Roche, Architects | $ 25,000.00 | $ 27,500.00 | $ 24,865.66 | $ 77,365.66 |
| John M. Ewen, Consulting Engineer | ............ | 29,375.00 | 15,625.00 | 45,000.00 |
| Gindele Bros., Contractors—Removal of Drake Fountain, etc. | ............ | 4,836.00 | ............ | 4,836.00 |
| Wm. J. Newman, Contractor—Wrecking old City Hall, excavating and caisson work | ............ | 76,000.00 | 250,305.00 | 326,305.00 |
| Noel Construction Co., Contractors—General work | ............ | ............ | 925,512.00 | 925,512.00 |
| Miscellaneous | ............ | 2,680.38 | 1,341.73 | 4,022.11 |
| Total | 25,000.00 | 140,391.38 | 1,217,649.39 | 1,383,040.77 |
| Grand total | $ 28,836.41 | $363,485.30 | $1,366,744.14 | $1,759,065.85 |

## TABLE No. XI.

## STATEMENT OF CORPORATE FUND REVENUE OF DEPARTMENT OF PUBLIC WORKS, FOR THE YEAR 1909.

**ORDINARY ACCOUNTS:**

| | | |
|---|---|---|
| Commissioner's Office—Forfeiture of deposits | $ 5,000.00 | |
| Bureau of Maps and Plats—Fees for legal descriptions | 944.25 | |
| Bureau of Engineering—Docking, dredging and towing permits | 5,789.71 | |
| Bureau of Engineering—Bridges and viaducts | 15,508.23 | |
| Bureau of Engineering—Inspection | 3,718.40 | |
| Bureau of Streets—House moving and manure vault permits, house movers' licenses | 2,014.62 | |
| Bureau of Streets—Corporation inspection | 39,522.00 | |
| Bureau of Streets—Miscellaneous—Cleaning right of way of street railways by City of Chicago | 136,785.00 | |
| Bureau of Streets—Miscellaneous—Cleaning right of way of street railways by citizens' street cleaning bureau | 10,919.73 | |
| Bureau of Streets—Miscellaneous—Use of streets and street openings | 109,497.24 | |
| Bureau of Sewers—House-drain permits | 41,425.00 | |
| Bureau of Sewers—Mason and junction setters' permits | 4,050.00 | |
| Bureau of Sewers—Miscellaneous—Drain layers' licenses, etc | 6,305.06 | |
| Bureau of Compensation—Space permits | 19,387.91 | |
| Bureau of Compensation—Switch tracks, bay windows, etc | 13,999.55 | |
| Bureau of Compensation—Vacation of streets and alleys | 76,510.64 | |
| Bureau of Compensation—Sub-sidewalk space | 1,140.77 | |
| Bureau of Compensation—Miscellaneous | 3,223.14 | |
| Total ordinary accounts | | $ 495,741.25 |

## TABLE No. XII.

## STATEMENT OF APPROPRIATIONS AND EXPENDITURES FOR THE YEAR 1909—WATER FUND, ORDINARY ACCOUNTS.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| **OFFICE OF COMMISSIONER OF PUBLIC WORKS:** | | | |
| Office salaries—90 per cent...... | $ 27,018.00 | $ 26,983.01 | $ 34.99 |
| Office expenses, printing, stationery, etc.—90 per cent......... | 4,050.00 | 3,870.41 | 179.59 |
| **BUREAU OF MAPS AND PLATS:** | | | |
| Office salaries—75 per cent...... | 23,940.00 | 23,724.85 | 215.15 |
| Office expenses, drawing material, rebinding atlases, etc.—75 per cent ........................ | 1,652.78 | 1,637.28 | 15.50 |
| Special work on new atlases—75 per cent .................... | 7,500.00 | 6,683.72 | 816.28 |
| **CITY ATTORNEY'S OFFICE:** | | | |
| Office salaries .................... | 75.000.00 | 75,000.00 | ............ |
| **CORPORATION COUNSEL'S OFFICE:** | | | |
| Office salaries ................. | 20,400.00 | 20,379.04 | 20.96 |
| **PAYMASTER'S OFFICE:** | | | |
| Office salaries and maintaining paywagon—30 per cent.......... | 4,019.10 | 4,018.31 | .79 |
| **BOARD OF LOCAL IMPROVEMENTS:** | | | |
| Office salaries and expenses..... | 82,428.70 | 72,513.40 | 9,915.30 |
| **DEPARTMENT OF SUPPLIES:** | | | |
| Office salaries .................. | 15.540.12 | 15,540.12 | ............ |
| **DEPARTMENT OF FINANCE:** | | | |
| Office salaries .................. | 9,500.00 | 9,500.00 | ............ |
| **BUREAU OF WATER:** | | | |
| Superintendent's Office—Salaries. | 24,000.00 | 21,564.52 | 2,435.48 |
| Collection Division, General—Salaries ..............$7,420.00<br>Additional appropriation, Council order, June 1, 1909........ 420.00 | 7,840.00 | 7.810.00 | 30.00 |
| Assessed Rates Subdivision—Salaries ...................... | 60,660.00 | 58,913.00 | 1,747.00 |
| Assessor's Division, General—Salaries ......................... | 17,780.00 | 17,166.67 | 613.33 |
| Meter Rates Subdivision—Salaries | 57,795.00 | 55,272.75 | 2,522.25 |
| Shut-Off Subdivision—Salaries... | 30,270.00 | 28,997.43 | 1,272.57 |
| Inspection Subdivision—Salaries. | 63,000.00 | 59,691.99 | 3,308.01 |
| Carried forward ............. | $ 532,393.70 | $ 509,266.50 | $ 23,127.20 |

## WATER FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 532,393.70 | $ 509,266.50 | $ 23,127.20 |
| **BUREAU OF WATER—Continued:** | | | |
| Permit and Map Subdivision—Salaries | 9,450.00 | 8,880.00 | 570.00 |
| Meter Mechanical Division—Salaries. . . . . . . $73,510.00<br>By transfer, Council order, December 13, 1909. . . . . . . . . . . . . 4,000.00 | 77,510.00 | 76,737.22 | 772.78 |
| Overtime and extra clerk hire . . . . . . . . . . . . . . . . $15,000.00<br>Less transfer, Council order, October 4, 1909. . . . . . . . . . . . . 3,000.00 | 12,000.00 | 11,986.86 | 13.14 |
| Postage | 14,000.00 | 14,000.00 | ............ |
| Printing, Stationery, etc. $20,600.00<br>Less transfer, Council order, October 4, 1909. . . . . . . . . . . . . 5,000.00 | 15,600.00 | 14,870.23 | 729.77 |
| Street car and railroad transportation | 3,000.00 | 2,716.45 | 283,55 |
| Rent of office space in Hamilton Bank Building | 17.419.92 | 17,314.93 | 104.99 |
| Meter repairs, material, etc. . . . . . . . . . . . . . . . $20,000.00<br>Less transfer, Council order, November 22, 1909. . . . . . . . . . . . . 2,000.00<br>Less transfer, Council order, December 13, 1909. . . . . . . . . . . . . 4,000.00 | 14,000.00 | 13,012.80 | 987.20 |
| Refunds on duplicate, wrong property, overpayments and erroneous water assessm'ts. $15,000.00<br>By transfer, Council order, October 4, 1909. . . . . . . . . . . . . 5,000.00 | 20,000.00 | 18,392.20 | 1,607.80 |
| **BUREAU OF ENGINEERING:** | | | |
| City Engineer's Office—Salaries | 14,320.00 | 14,320.00 | ............ |
| City Engineer's Office—Overtime salaries | 550.00 | 549.00 | 1.00 |
| City Engineer's Office—Expenses, stationery and supplies | 4,500.00 | 3,486.59 | 1,013.41 |
| City Engineer's Office—Miscellaneous salaries | 8,900.00 | 8,795.18 | 104.82 |
| Engineer in charge of pumping stations | 3,000.00 | 3,000.00 | ............ |
| Rent of office space in Lehmann Building | 8,160.88 | 8,160.84 | .04 |
| Testing Division—Salaries | 11,599.00 | 11,390.72 | 208.28 |
| Testing Division—Supplies | 2,000.00 | 1,395.13 | 604.87 |
| Carried forward | $ 768,403.50 | $ 738,274.65 | $ 30,128.85 |

## WATER FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 768,403.50 | $ 738,274.65 | $ 30,128.85 |
| BUREAU OF ENGINEERING—Continued: | | | |
| Pitometer and Water Waste Surveys ......$55,000.00<br>Less transfer, Council order, December 13, 1909. ............ 3,000.00 | 52,000.00 | 47,758.88 | 4,241.12 |
| Cribs—Operation: | | | |
| Two-Mile Crib: | | | |
| Salaries | 18,500.00 | 15,631.00 | 2,869.00 |
| Fuel and supplies | 1,100.00 | 663.94 | 436.06 |
| Four-Mile Crib: | | | |
| Salaries | 5,000.00 | 4,378.68 | 621.32 |
| Fuel and supplies | 800.00 | 696.88 | 103.12 |
| Lake View Crib: | | | |
| Salaries | 5,000.00 | 4,789.38 | 210.62 |
| Fuel and supplies | 900.00 | 620.10 | 279.90 |
| Hyde Park Crib: | | | |
| Salaries | 5,200.00 | 5,116.08 | 83.92 |
| Fuel and supplies | 1,000.00 | 803.26 | 196.74 |
| Carter H. Harrison Crib: | | | |
| Salaries | 7,815.00 | 6,417.15 | 1,397.85 |
| Fuel and supplies | 1,200.00 | 783.52 | 416.48 |
| Cribs—Repairs and Renewals: | | | |
| Two-Mile Crib | 1,500.00 | 1,277.09 | 222.91 |
| Four-Mile Crib | 1,500.00 | 1,042.17 | 457.83 |
| Lake View Crib | 1,400.00 | 1,205.88 | 194.12 |
| Hyde Park Crib | 3,900.00 | 3,078.09 | 821.91 |
| Carter H. Harrison Crib | 1,700.00 | 897.91 | 802.09 |
| Tug Service: | | | |
| Three winter months | 10,000.00 | 7,791.37 | 2,208.63 |
| Nine summer months | 6,000.00 | 4,603.92 | 1,396.08 |
| Pumping Stations—Operation: | | | |
| Chicago Ave. Pumping Station: | | | |
| Salaries | 55,000.00 | 53,973.75 | 1,026.25 |
| Fuel | 49,000.00 | 43,262.64 | 5,737.36 |
| Supplies, etc. | 8,000.00 | 7,396.56 | 603.44 |
| Fourteenth St. Pumping Station: | | | |
| Salaries | 41,500.00 | 39,880.96 | 1,619.04 |
| Fuel | 60,000.00 | 45,561.93 | 14,438.07 |
| Supplies, etc. | 9,000.00 | 7,091.83 | 1,908.17 |
| Harrison St. Pumping Station: | | | |
| Salaries | 27,000.00 | 26,080.62 | 919.38 |
| Fuel | 25,000.00 | 17,843.12 | 7,156.88 |
| Supplies, etc. | 5,000.00 | 3,859.13 | 1,140.87 |
| Carried forward | $ 1,172,418.50 | $ 1,090,780.49 | $ 81,638.01 |

## WATER FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 1,172,418.50 | $ 1,090,780.49 | $ 81,638.01 |
| **BUREAU OF ENGINEERING—Continued:** | | | |
| **Lake View Pumping Station:** | | | |
| **Salaries** | 39,900.00 | 38,651.92 | 1,248.08 |
| **Fuel** | 45,000.00 | 31,722.06 | 13,277.94 |
| **Supplies, etc.** | 5,000.00 | 4,045.14 | 954.86 |
| **Twenty-second St. Pumping Station:** | | | |
| **Salaries** | 47,000.00 | 45,834.15 | 1,165.85 |
| **Fuel** | 55,000.00 | 44,374.99 | 10,625.01 |
| **Supplies, etc.** | 5,040.61 | 4,386.72 | 653.89 |
| **Sixty-eighth St. Pumping Station:** | | | |
| **Salaries** | 70,000.00 | 66,268.66 | 3,731.34 |
| **Fuel** | 59,000.00 | 46,833.59 | 12,166.41 |
| **Supplies, etc.** | 10,000.00 | 8,603.47 | 1,396.53 |
| **Central Park Ave. Pumping Station:** | | | |
| **Salaries** | 50,000.00 | 43,524.89 | 6,475.11 |
| **Fuel** | 45,500.00 | 40,232.19 | 5,267.81 |
| **Supplies, etc.** | 7,000.00 | 6,416.04 | 583.96 |
| **Springfield Ave. Pumping Station:** | | | |
| **Salaries** | 50,000.00 | 48,951.09 | 1,048.91 |
| **Fuel** | 46,000.00 | 40,175.01 | 5,824.99 |
| **Supplies, etc.** | 5,000.00 | 4,994.18 | 5.82 |
| **Norwood Park Pumping Station:** | | | |
| **Salaries** | 4,100.00 | 4,063.71 | 36.29 |
| **Fuel** | 1,500.00 | 1,111.00 | 389.00 |
| **Supplies, etc.** | 400.00 | 220.03 | 179.97 |
| **Washington Heights Pumping Station** | | | |
| **Salaries** | 10,000.00 | 9,553.26 | 446.74 |
| **Fuel** | 4,437.56 | 3,458.56 | 979.00 |
| **Supplies, etc.** | 753.60 | 732.08 | 21.52 |
| **Rogers Park Pumping Station:** | | | |
| **Salaries** | 8,000.00 | 7,559.11 | 440.89 |
| **Fuel** | 10,000.00 | 5,710.34 | 4,289.66 |
| **Supplies, etc.** | 2,950.00 | 938.19 | 2,011.81 |
| **Pumping Stations—Repairs and Renewals:** | | | |
| **Chicago Ave Pumping Station** | 19,549.73 | ............ | ............ |
| **Labor** | ............ | 7,982.98 | ............ |
| **Material, etc.** | ............ | 11,563.03 | 3.72 |
| **Fourteenth St. Pumping Station** | 19,057.72 | ............ | ............ |
| **Labor** | ............ | 10,175.30 | ............ |
| **Material, etc.** | ............ | 7,830.37 | 1,052.05 |
| **Harrison St. Pumping Station** | 9,000.00 | ............ | ............ |
| **Labor** | ............ | 4,753.17 | ............ |
| **Material, etc.** | ............ | 1,853.72 | 2,393.11 |
| Carried forward | $ 1,801,607.72 | $ 1,643,299.44 | $ 158,308.28 |

## WATER FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 Including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 1,801,607.72 | $ 1,643,299.44 | $ 158,308.23 |
| BUREAU OF ENGINEERING—Continued: | | | |
| Lake View Pumping Station | 10,400.00 | ............ | ............ |
| Labor | ............ | 6,181.00 | ............ |
| Material, etc | ............ | 4,170.39 | 48.61 |
| Twenty-second St. Pumping Station: | 17,400.00 | ............ | ............ |
| Labor | ............ | 8,459.16 | ............ |
| Material, etc | ............ | 2,770.56 | 6,170.28 |
| Sixty-eighth St. Pumping Station: | 19,005.50 | ............ | ............ |
| Labor | ............ | 12,573.17 | ............ |
| Material, etc | ............ | 6,148.39 | 283.94 |
| Central Park Ave. Pumping Station: | 17,600.00 | ............ | ............ |
| Labor | ............ | 10,506.15 | ............ |
| Material, etc | ............ | 7,068.28 | 25.57 |
| Springfield Ave. Pumping Station | 16,000.00 | ............ | ............ |
| Labor | ............ | 8,802.78 | ............ |
| Material, etc | ............ | 6,636.09 | 561.13 |
| Norwood Park Pumping Station | 1,500.00 | ............ | ............ |
| Labor | ............ | 220.88 | ............ |
| Material, etc | ............ | 398.52 | 880.60 |
| Washington Heights Pumping Station | 1,600.00 | ............ | ............ |
| Labor | ............ | 237.82 | ............ |
| Material, etc | ............ | 1,272.56 | 89.62 |
| Rogers Park Pumping Station | 4,000.00 | ............ | ............ |
| Labor | ............ | 1,154.53 | ............ |
| Material, etc | ............ | 2,788.64 | 56.83 |
| Water Pipe Extension — Repairs and Renewals: | | | |
| Office salaries | 16,736.00 | 15,880.97 | 855.03 |
| Labor—Mains and Hydrants $308,066.40<br>By transfer, Council order, November 1, 1909 40,000.00<br>By transfer, Council order, December 13, 1909 10.000.00 | 358,066.40 | 357,966.11 | 100.29 |
| Horse feed and transportation | 1,250.00 | 1,250.00 | ............ |
| Miscellaneous material $35,149.63<br>Less transfer Council order, November 1, 1909 3,000.00 | 32,149.63 | 24,618.86 | 7,530.77 |
| Pipe Yards—Salaries | 24.747.00 | 24,202.61 | 544.39 |
| Special castings $12,000.00<br>Less transfer, Council order, November 1, 1909 1,000.00<br>Less transfer Council order, December 13, 1909 3,000.00 | 8,000.00 | 2,330.62 | 5,669.38 |
| Carried forward | $ 2,330,062.25 | $ 2,148,937.58 | $ 181,124.72 |

## WATER FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | | Appropriations 1909 Including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|---|
| Brought forward ............. | | $ 2,330,062.25 | $ 2,148,937.53 | $ 181,124.72 |
| BUREAU OF ENGINEERING—Continued: | | | | |
| Lumber . ............ | $ 4,029.92 | | | |
| Less transfer Council order, December 13, 1909........ | 2,000.00 | 2,029.92 | 1,176.24 | 853.68 |
| Hydrant rings and covers. . . . ......... | $ 1.000.00 | | | |
| Less transfer, Council order, November 1, 1909........ | 800.00 | 200.00 | 1.45 | 198.55 |
| Teaming . ............ | $35,877.40 | | | |
| By transfer, Council order, November 1, 1909. . . .......... | 6.500.00 | 42,377.40 | 42,373.42 | 3.98 |
| Cast iron pipe ................. | | 5,000.00 | 4,986.16 | 13.84 |
| Valve basin covers..... | $ 5,700.00 | | | |
| Less transfer, Council order, November 1, 1909........ | 2,500.00 | 3,200.00 | 3,158.92 | 41.08 |
| Protection of fire hydrants...... | | 40,000.00 | 34,628.09 | 5,371.91 |
| Labor—tapping and retapping... | | 61,069.50 | 57,285.92 | 878.06 |
| Material—tapping and retapping | | | 3,405.52 | |
| Stop cocks, solder and taps...... | | 15,000.00 | 14,589.57 | 410.43 |
| Office stationery and supplies.... | | 900.00 | 818.64 | 81.36 |
| Brass castings ........ | $ 2,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909 . ............ | 2,000.00 | | | |
| Hydrant and stop valve castings . .......... | $10,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909 . ........... | 10,000.00 | | | |
| Emergency gangs .... | | 7,500.00 | 7,500.00 | ............ |
| Restoration of streets. | $ 5,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909 . ............ | 3.000.00 | 2,000.00 | 1,092.07 | 907.93 |
| Reimbursing Bureau of streets . ............ | | 25,014.00 | 13,720.45 | 11,293.55 |
| Protection of street ends | | 7,500.00 | 4,362.49 | 3,137.51 |
| Maintenance of tunnels and shafts ........ | $ 5,000.00 | | | |
| By transfer, Council order, Oct. 4, 1909 . ............ | 3,500.00 | 8,500.00 | 7,258.72 | 1,241.28 |
| Carried forward ............. | | $ 2,550,353.07 | $ 2,345,295.19 | $ 205,057.88 |

## WATER FUND, ORDINARY ACCOUNTS—Continued.

| ORDINARY ACCOUNTS | Appropriations 1909 Including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 2,550,353.07 | $ 2,345,295.19 | $ 205,057.88 |
| **BUREAU OF ENGINEERING—Continued:** | | | |
| Damage to property on account of burst mains, tunnels, etc. ........$25,000.00 | | | |
| Less transfer, Council order, Dec. 13, 1909 ............ 5,000.00 | 20,000.00 | 16,466.78 | 3,533.22 |
| Water Works Shops and Repair Division: | | | |
| General salaries | 21,052.00 | 20,635.00 | 417.00 |
| Office expenses | 1,000.00 | 483.53 | 516.47 |
| MISCELLANEOUS: | | | |
| Harbor police—salaries | 6,480.00 | 5,400.00 | 1,080.00 |
| Dredging inspectors—salaries | 7,200.00 | 6,543.31 | 656.69 |
| Bureau of Sewers—Fullerton Avenue Pumping Station: | | | |
| Salaries | 12,555.00 | 12,537.00 | 18.00 |
| Fuel | 9,000.00 | 5,220.67 | 3,779.33 |
| Supplies, etc. | 3,631.45 | 1,001.62 | 2,629.83 |
| Repairs | 1,900.00 | 1,811.29 | 88.71 |
| Interest on Water Pipe extension certificates | 15,000.00 | 5,212.99 | 9,787.01 |
| Interest on water loan bonds | 190,220.00 | 190,220.00 | ............ |
| Interest on judgments | 1,500.00 | 181.06 | 1,318.94 |
| Interest on water certificates | 75,000.00 | 75,000.00 | ............ |
| Accrued interest on water loan bonds | 4,241.67 | 4,241.67 | ............ |
| Costs on judgments | 1,000.00 | 109.30 | 890.70 |
| Intercepting Sewers: | | | |
| C. H. Harrison, Sr., Pumping Station—Operation. | | | |
| Salaries ............$14,100.00 | | | |
| Additional appropriation, Council order, July 6, 1909....... 17,000.00 | 31,100.00 | 31,067.07 | 32.93 |
| Fuel ..............$ 8,000.00 | | | |
| Additional appropriation, Council order, July 6, 1909 ...... 11,000.00 | 19,000.00 | 15,962.01 | 3,037.99 |
| Supplies, etc | 5,000.00 | 3,049.12 | 1,950.88 |
| Repairs ...........$ 3,029.25 | | | |
| Additional appropriation, Council order, July 6, 1909...... 2,000.00 | 5,029.25 | 3,868.56 | 1,160.69 |
| Carried forward | $2,980,262.44 | $2,744,306.17 | $ 235,956.27 |

## WATER FUND, ORDINARY ACCOUNTS—CONTINUED.

| ORDINARY ACCOUNTS | Appropriations 1909 Including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $2,980,262.44 | $2,744,306.17 | $235,956.27 |
| MISCELLANEOUS—Continued: | | | |
| Lawrence Avenue Pumping Station—operation: | | | |
| Salaries ........ $20,200.00<br>Additional appropriation, Council order, January 24, 1910 ........ 1,791.88 | 21,991.88 | 21,966.31 | 25.57 |
| Fuel | 6,850.00 | 6,838.56 | 11.14 |
| Supplies, etc. | 2,169.77 | 2,143.52 | 26.25 |
| Repairs | 800.00 | 684.16 | 115.84 |
| Total ordinary accounts | $3,012,074.09 | $2,775,938.72 | $236,135.37 |

## TABLE No. XIII.

### STATEMENT OF APPROPRIATIONS AND EXPENDITURES FOR THE YEAR 1909—WATER FUND, EXTRAORDINARY ACCOUNTS.

| EXTRAORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| **BUREAU OF ENGINEERING:** | | | |
| Land Tunnels: | | | |
| Southwest land and lake tunnel, Section one .........$186,416.52<br>Less transfer, Council order, Oct. 4, 1909. . ........... 3,500.00 | 182,916.52 | 161,301.67 | 21,614.85 |
| Southwest land and lake tunnel, Section two............ | 56,999.96 | 56.081.46 | 918.50 |
| Southwest land and lake tunnel, Sluice gates ............ | 10,000.00 | 216.27 | 9,783.73 |
| Southwest land and lake tunnel, connecting with 68th St. Pumping Station ........... | 10,000.00 | ............. | 10,000.00 |
| New tunnel, Chicago avenue to 22nd St. Pumping Station. | 25,617.58 | 15,171.02 | 10,446.56 |
| Blue Island avenue tunnel, new Sluice gates ................ | 9,542.00 | 6,139.30 | 3,402.70 |
| Blue Island avenue tunnel, connections with pumping stations . .................... | 30,000.00 | 27,074.71 | 2,925.29 |
| Lake Tunnel: | | | |
| Southwest land and lake tunnel, Section three .............. | 599,171.27 | 502,995.45 | 96,175.82 |
| Pumping Stations: | | | |
| Chicago Av. Pumping Station—new engines, etc ............ | 32,000.57 | 30,057.00 | 1,943.57 |
| Chicago Av. Pumping Station—repairs to walls and finishing interior . .................. | 5,025.01 | 4,855.52 | 169.49 |
| Chicago Av. Pumping Station—repairs to walls and finishing interior above main floor .... | 5,000.00 | 1,819.53 | 3,180.47 |
| Chicago Av. Pumping Station—miscellaneous betterments .. | 3,500.00 | 157.50 | 3,342.50 |
| Lake View Pumping Station—addition to building, remodeling Station, etc.............. | 46,423.80 | 43,915.41 | 2,508.39 |
| Lake View Pumping Station—new engines . ............. | 50,655.00 | 19,876.64 | 30,778.36 |
| Lake View Pumping Station—miscellaneous betterments . . | 5,000.00 | 2,020.57 | 2,979.43 |
| Sixty-eighth St. Pumping Station—engines and foundations .......... | 3,984.40 | 3,984.40 | ............. |
| Sixty-eighth St. Pumping Station—new boilers and remodeling boiler room .............................. | 50,000.00 | 4,725.06 | 45,274.94 |
| Carried forward .............. | $ 1,125,836.11 | $ 880,391.51 | $ 245,444.60 |

## WATER FUND, EXTRAORDINARY ACCOUNTS—Continued.

| EXTRAORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 1,125,836.11 | $ 880,391.51 | $ 245,444.60 |
| **BUREAU OF ENGINEERING—Continued:** | | | |
| Sixty-eighth St. Pumping Station—miscellaneous betterments | 5,000.00 | ............ | 5,000.00 |
| Central Park Av. and Springfield Av. Pumping Stations—engines and foundations | 18,540.64 | 690.64 | 17,850.00 |
| Central Park Av. and Springfield Av. Pumping Stations—additional boilers and appurtenances | 2,099.95 | 1,649.95 | 450.00 |
| Central Park Av. Pumping Station—miscellaneous betterments | 5,029.03 | 3,222.15 | 1,806.88 |
| Springfield Av. Pumping Station—miscellaneous betterments | 5,000.82 | 395.28 | 4,605.54 |
| Twenty-second St. Pumping Station—paving Ashland av. | 4,998.16 | 4,180.52 | 817.64 |
| Twenty-second St. Pumping Station—miscellaneous betterments | 5,000.00 | ............ | 5,000.00 |
| Fourteenth St. Pumping Station—miscellaneous betterments | 5,000.00 | ............ | 5,000.00 |
| Harrison St. Pumping Station—miscellaneous betterments | 5,000.00 | ............ | 5,000.00 |
| Norwood Park Pumping Station—miscellaneous betterments | 400.00 | ............ | 400.00 |
| Washington Heights Pumping Station—miscellaneous betterments | 600.00 | ............ | 600.00 |
| Rogers Park Pumping Station—new filters, setting new boilers, piping, etc. | 15,000.00 | 14,981.98 | 18.02 |
| Rogers Park Pumping Station—miscellaneous betterments | 3,602.33 | 2,402.65 | 1,199.68 |
| Roseland Pumping Station—foundations | 60,261.20 | 53,261.61 | 6,999.59 |
| Roseland Pumping Station—engines, including foundations, boilers, etc. | 100,000.00 | 555.67 | 99,444.33 |
| Roseland Pumping Station—engine house, boiler room, chimney, etc. | 50,000.00 | 11,932.22 | 38,067.78 |
| Roseland Pumping Station—roadway | 2,200.00 | 2,125.00 | 75.00 |
| Purchase of real estate for pumping stations | 10,000.00 | 55.23 | 9,944.77 |
| Smoke preventive devices for pumping stations | 1,700.00 | ............ | 1,700.00 |
| Water Pipe Extension: | | | |
| Office stationery and supplies | 2,100.00 | 2,041.10 | 58.90 |
| Miscellaneous material ........ $ 90,000.00<br>Less transfer, Council order, Nov. 1, 1909 ........ 2,000.00 | 88,000.00 | 78,265.60 | 9,734.40 |
| Carried forward | $ 1,515,368.24 | $ 1,056,151.11 | $ 459,217.13 |

## WATER FUND, EXTRAORDINARY ACCOUNTS—Continued.

| EXTRAORDINARY ACCOUNTS | | Appropriations 1909 Including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|---|
| Brought forward | | $ 1,515,368.24 | $ 1,056,151.11 | $ 459,217.13 |
| **BUREAU OF ENGINEERING—Continued:** | | | | |
| Reimbursing Bureau of Streets | | 10,000.00 | 5,704.33 | 4,295.67 |
| Office salaries | | 10,604.00 | 10,520.80 | 83.20 |
| Labor, mains and hydrants | $127,599.60 | | | |
| By transfer, Council order, Nov. 1, 1909. | 10,000.00 | | | |
| By transfer, Council order, Dec. 13, 1909. | 10,000.00 | 147,599.60 | 141,587.04 | 6,012.56 |
| Horse feed and transportation | | 3,750.00 | 3,750.00 | ............ |
| Pipe yard, salaries | | 16,498.00 | 16,166.84 | 331.16 |
| Special castings | $23,428.72 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 1,000.00 | 22,428.72 | 18,972.02 | 3,456.70 |
| Brass castings | $ 3,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 3,000.00 | | | |
| Valve basin covers | $ 9,300.00 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 500.00 | 8,800.00 | 8,720.49 | 79.51 |
| Hydrant and valve castings | $15,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 15,000.00 | | | |
| Hydrant rings and covers | $1,500.00 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 1,200.00 | 300.00 | 5.82 | 294.18 |
| Lumber | | 6,189.10 | 2,670.85 | 3,518.25 |
| Teaming | $14,122.60 | | | |
| By transfer, Council order, Nov. 1, 1909. | 3,500.00 | 17,622.60 | 17,622.60 | ............ |
| Cast iron water pipe | | 95,000.00 | 94,983.07 | 16.93 |
| Remodeling and repairing pipe and district yards | $ 4,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 2,000.00 | 2,000.00 | 1,527.31 | 472.69 |
| Work for Board of Local Improvements | | 11,830.00 | 11,701.75 | 128.25 |
| Feeder mains, Larrabee, Fullerton, Clark Sts. | $ 16,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909 | 7,000.00 | 9,000.00 | 3,881.57 | 5,118.43 |
| Carried forward | | $ 1,876,990.26 | $ 1,393,965.60 | $ 483,024.66 |

## WATER FUND, EXTRAORDINARY ACCOUNTS—Continued.

| EXTRAORDINARY ACCOUNTS | | Appropriations 1909 Including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|---|
| Brought forward | | $ 1,876,990.26 | $ 1,393,965.60 | $ 483,024.66 |
| BUREAU OF ENGINEERING—Continued: | | | | |
| Discharge mains at Lake View Pumping Station | $ 15,000.00 | | | |
| Less transfer, Council order, Nov. 1, 1909. | 3,500.00 | 11,500.00 | 7,449.09 | 4,050.91 |
| Reconstructing mains and hydrants in loop district: By ordinance, Oct. 18, 1909. | $ 12,000.00 | 12,000.00 | 12,000.00 | ............ |
| Circulating mains for eliminating dead ends | $ 7,500.00 | | | |
| Less transfer, Council order, Nov. 1, 1909 | 2,500.00 | 5,000.00 | 1,191.56 | 3,808.44 |
| Private work and laying water pipe by deposit | $125,000.00 | | | |
| Less transfer, Council order, Dec. 13, 1909. | 7,000.00 | 118,000.00 | 114,273.24 | 3,726.76 |
| Water supply pipes, public benefits | | 4,956.61 | 4,933.74 | 22.87 |
| Redemption of maturing water pipe extension certificates | | ............ | 52,579.09 | 11.27 |
| Redemption of special assessment receipts for water supply pipes. | | ............ | 17,317.53 | |
| Redemption of special assessment receipts for water service pipes. | 15,000.00 | ............ | 92.11 | |
| By ordinance, October 26, 1909 | 55,000.00 | 70,000.00 | ............ | |
| Miscellaneous: | | | | |
| Redemption of water loan bonds, due July 1, 1909. By ordinance, June 28, 1909. | $225,000.00 | 225,000.00 | 225,000.00 | ............ |
| Judgments | | 50,000.00 | 21,205.02 | 28,794.98 |
| Purchase of Rogers Park water system. | | 241,140.34 | 60,500.00 | 180,640.34 |
| Water Works Shops and Repair Division—New machinery and alterations. | | 7,000.00 | 6,795.12 | 204.88 |
| Carried forward | | $ 2,621,587.21 | $ 1,917,302.10 | $ 704,285.11 |

## WATER FUND, EXTRAORDINARY ACCOUNTS—Continued.

| EXTRAORDINARY ACCOUNTS | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Brought forward | $ 2,621,587.21 | $ 1,917,302.10 | $ 704,285.11 |
| BUREAU OF ENGINEERING—Continued: | | | |
| Intercepting Sewers: | | | |
| Lawrence Ave. conduit—Repairs | 20,000.00 | 14,202.96 | 5,797.04 |
| Intake in tunnel at Lawrence Ave. | 60,044.55 | 23,078.04 | 36,966.51 |
| C. H. Harrison, Sr., Pumping Station—wells and building | 6,658.49 | 4,747.33 | 1,911.16 |
| C. H. Harrison, Sr., Pumping Station—breakwater for protection | 3,500.00 | 3,297.07 | 202.93 |
| C. H. Harrison, Sr., Pumping Station—pumping machinery | 61,003.11 | 31,736.03 | 29,267.08 |
| Lawrence Ave. Pumping Station—Wells and buildings | 24,409.29 | 17,837.55 | 6,571.74 |
| Lawrence Ave. Pumping Station—Pumping machinery | 34,118.11 | 26,569.68 | 7,548.43 |
| Office salaries | 1,800.00 | 1,763.19 | 36.81 |
| Office expenses | 500.00 | 362.61 | 137.39 |
| Maintenance | 5,174.21 | 2,571.29 | 2,602.92 |
| Reversal and connecting sewers—North side | 1,334.78 | 1,284.78 | 50.00 |
| Reversal of sewers—South side | 10,000.00 | 1,647.35 | 8,352.65 |
| Rebuilding 3-ft. sewer in Lawrence Ave. to alley East of Magnolia Ave. | 431.85 | 20.00 | 411.85 |
| Restoration of Jackson Park Ave. 64th to 73rd Sts. | 25,000.00 | ............ | 25,000.00 |
| Repaving Lawrence Ave.—Evanston Ave. to C. M. & St. P. R. R. tracks | 3,500.00 | 2,900.50 | 599.50 |
| BUREAU OF WATER: | | | |
| Meters: | | | |
| Purchase and installation. . . . $69,000.00<br>By transfer, Council order, October 4, 1909. . . . 3,000.00<br>By transfer, Council order, November 22, 1909. . . . 2,000.00 | 74,000.00 | 62,385.38 | 11,614.62 |
| Total extraordinary accounts | $2,953,061.60 | $2,111,705.86 | $ 841,355.74 |

## TABLE No. XIV.

## STATEMENT OF APPROPRIATIONS AND EXPENDITURES FOR THE YEAR 1909—WATER FUND, SUMMARY OF ORDINARY AND EXTRAORDINARY ACCOUNTS.

| | Appropriations 1909 including Unexpended Balances Brought Forward from 1908 on Account of Contract Liability | Expenditures 1909 | Unexpended Balances December 31, 1909 |
|---|---|---|---|
| Ordinary Accounts: | | | |
| Commissioner's office 90 per cent. | $ 31,068.00 | $ 30,853.42 | $ 214.58 |
| Bureau of Maps and Plats, 75 per cent. | 33,092.78 | 32,045.85 | 1,046.93 |
| City Attorney's office | 75,000.00 | 75,000.00 | ............ |
| Corporation Counsel's office | 20,400.00 | 20,379.04 | 20.96 |
| Paymaster's office, 30 per cent. | 4,019.10 | 4,018.31 | .79 |
| Board of Local Improvements | 82,428.70 | 72,513.40 | 9,915.30 |
| Department of Supplies | 15,540.12 | 15,540.12 | ............ |
| Department of Finance | 9,500.00 | 9,500.00 | ............ |
| Bureau of Water | 444,324.92 | 427,327.05 | 16,997.87 |
| Bureau of Engineering | 105,029.88 | 98,856.34 | 6,173.54 |
| Cribs | 56,515.00 | 47,401.13 | 9,113.87 |
| Tug Service | 16,000.00 | 12,395.29 | 3,604.71 |
| Pumping Stations | 996,194.72 | 876,858.41 | 119,336.31 |
| Water Pipe Extension | 703,291.85 | 660,192.14 | 43,099.71 |
| Miscellaneous | 419,669.02 | 393,058.22 | 26,610.80 |
| Total ordinary expenditures | $3,012,074.09 | $2,775,938.72 | $ 236,135.37 |
| Extraordinary Accounts: | | | |
| Land Tunnels | $ 325,076.06 | $ 265,984.43 | $ 59,091.63 |
| Lake Tunnels | 599,171.27 | 502,995.45 | 96,175.82 |
| Pumping Stations | 501,020.91 | 206,864.53 | 294,156.38 |
| Water Pipe Extension | 673,178.63 | 627,957.55 | 45,221.08 |
| Water Works Construction and Repair Division | 7,000.00 | 6,795.12 | 204.88 |
| Intercepting Sewers | 257,474.39 | 132,018.38 | 125,456.01 |
| Meters | 74,000.00 | 62,385.38 | 11,614.62 |
| Miscellaneous | 516,140.34 | 306,705.02 | 209,435.32 |
| Total extraordinary expenditures. | $ 2,953,061.60 | $ 2,111,705.36 | $ 841,355.74 |
| Total ordinary expenditures | $ 3,012,074.09 | $ 2,775,938.72 | $ 236,135.37 |
| Total extraordinary expenditures. | 2,953,061.60 | 2,111,705.86 | 841,355.74 |
| Grand Total | $ 5,965,135.69 | $ 4,887,644.58 | $ 1,077.491.11 |

## TABLE No. XV.

## STATEMENT OF REVENUE FOR THE YEAR 1909—WATER FUND, ORDINARY AND EXTRAORDINARY ACCOUNTS.

| | | |
|---|---|---|
| ORDINARY ACCOUNTS: | | |
| Assessed rates collected.................. | $2,835,222.40 | |
| Miscellaneous Water Sales.............. | 30,561.56 | |
| Meter Service........................ | 2,166,224.52 | |
| Permits................................. | 28,973.75 | |
| Meter Mechanical.................... .... | 2,560.79 | |
| Rent of Rookery property.............. | 35,000.04 | |
| Miscellaneous............................ | 143,092.71 | |
| Total ordinary accounts............... | | $5,241,635.77 |
| EXTRAORDINARY ACCOUNTS: | | |
| Fourteenth Street Pumping Station...... | $ 5,000.00 | |
| Total Extraordinary Accounts......... | | 5,000.00 |
| Grand total......................... | | $5,246,635.77 |

## TABLE No. XVI.

### COMPARATIVE STATEMENT OF ORDINARY REVENUE AND ORDINARY EXPENSE OF WATER SYSTEM FOR THE YEARS 1902 TO 1909 INCLUSIVE.

| YEAR | Ordinary Revenue | Increase over Preceding Year | Per Cent. Increase over Preceding Year | Ordinary Expense | Increase over Preceding Year | Per Cent. Increase over Preceding Year | Excess of Ordinary Revenue over Ordinary Expense | Per Cent. Increase of Excess of Ordinary Revenue over Ordinary Expense over Preceding Year | Per Cent. of Ordinary Expense to Ordinary Revenue |
|---|---|---|---|---|---|---|---|---|---|
| 1902........ | $ 3,505,473.16 | ........... | ........... | $ 1,787,925.13 | ........... | ........... | $ 1,717,548.03 | ........... | 51.00 |
| 1903........ | 3,818,884.11 | $ 313,410.95 | 8.94 | 1,798,143.34 | $ 10,218.21 | .57 | 2,020,740.77 | 17.65 | 47.09 |
| 1904........ | 4,086,936.35 | 268,052.24 | 7.02 | 1,946,187.54 | 148,044.20 | 8.23 | 2,140,748.81 | 5.94 | 47.62 |
| 1905........ | 4,209,391.55 | 122,455.20 | 3.00 | 2,048,664.75 | 102,477.21 | 5.27 | 2,160,726.80 | .93 | 48.67 |
| 1906........ | 4,420,367.27 | 210,975.72 | 5.01 | 2,060,249.12 | 11,584.37 | .57 | 2,360,118.15 | 9.23 | 46.61 |
| 1907........ | 4,726,205.63 | 305,838.36 | 6.92 | 2,442,122.97 | 381,873.85 | 15.64 | 2,284,082.66 | *3.22 | 51.67 |
| 1908........ | 4,953,640.30 | 227,434.67 | 4.81 | 2,702,811.40 | 260,688.43 | 10.67 | 2,250,828.90 | *1.45 | 51.56 |
| 1909........ | 5,241,635.77 | 287,995.47 | 5.81 | 2,775,938.72 | 73,127.32 | 2.70 | 2,465,697.05 | 9.54 | 52.95 |

* Per cent. decrease.

## TABLE No. XVII.

### STATEMENT OF FREE WATER SERVICE RENDERED BY THE CHICAGO WATER WORKS DURING THE YEAR 1909.

| | CLASSIFICATION | AMOUNT |
|---|---|---|
| (*A*) | Fire hydrants (23,339 at $40.00 each, based on hydrant rentals,) | $ 933,560.00 |
| | Public parks | 135,000.00 |
| | Street cleaning and sprinkling | 60,000.00 |
| | Flushing sewers | 11,270.00 |
| | Track elevation and street improvements | 5,000.00 |
| (*B*) | Police stations | 3,277.45 |
| | Fire engine houses | 3,531.40 |
| | Public schools | 76,782.60 |
| | Public baths | 3,125.50 |
| | Small parks and playgrounds | 10,605.00 |
| | Electric light plants | 14.122.83 |
| | Pumping stations | 15,338.50 |
| | State property | 1,099.53 |
| | Miscellaneous city property | 9,571.29 |
| | Parochial and private schools and colleges | 27,164.96 |
| | Churches and parsonages | 34,298.14 |
| | Hospitals | 18,923.60 |
| | Asylums and Homes | 12,965.81 |
| | Miscellaneous religious, educational and charitable institutions | 10,795.98 |
| | Total | $1,386.432.59 |

(*A*) Estimated by City Engineer.

(*B*) Recorded as decreased upon the Records of the Bureau of Water—Assessed rates, $202,316.58; meter rates, $39,286.01.

## TABLE No. XVIII.

### STATEMENT OF WATER FUND COLLECTIONS DURING THE YEAR 1909.

| | | |
|---|---|---|
| COLLECTIONS BY CASHIER OF BUREAU OF WATER: | | |
| Assessed Rates | $2,835,222.40 | |
| Meter Rates | 2,166,224.52 | |
| Assessor's Miscellaneous | 30,561.56 | |
| Permits | 28,973.75 | |
| Meter Mechanical | 2,560.79 | |
| Suspense Account No. 1 | 82.66 | |
| Suspense Account No. 2 | 10.86 | |
| Total | | $5,063,636.54 |
| COLLECTIONS BY CITY COLLECTOR ON WARRANTS FOR COLLECTION: | | |
| Use of water in construction of cement walks. | $ 4,640.37 | |
| Sale of old material of Water Works | 7,349.41 | |
| Services and material to city departments | 1,057.62 | |
| Services and material to private parties | 121,323.84 | |
| S. Freeman & Sons Mfg. Co., account Circuit Court order in re Mohr vs. City | 5,000.00 | |
| American Surety Co. of New York, account default of Farley & Green, on contract Sec. D, Intercepting Sewers | 38,000.00 | |
| Petty cash fund | 2,000.00 | |
| Rent of Rookery property | 35,000.04 | |
| Other rents | 3,161.00 | |
| Use of water from Fullerton Avenue Conduit. | 2,500.00 | |
| Discount from Gregory Electric Co. | .19 | |
| Total | | 220,032.47 |
| COLLECTIONS BY CITY COMPTROLLER: | | |
| Interest on funds in hands of various City depositaries | $5,343.91 | |
| Miscellaneous credits to expense | 285.55 | |
| Total | | 5,629.46 |
| Grand total | | $5,289,298.47 |

In addition to the above, special deposits amounting to $130,503.64 were collected by Cashier of Bureau of Water.

In addition to the above earnings, warrants for collection for labor performed and material furnished by the Water Works Shops and Repair Division, amounting to $150,082.24, were collected by City Collector.

Refunds amounting to $18,392.20 were disbursed by the Cashier of Bureau of Water on account of duplicate, wrong property, over-payments and erroneous assessments paid.

Of the above total collections, the amount of $5,246,298.47 applies to ordinary revenue, and the amount of $43,000.00 applies to extraordinary revenue.

## TABLE No. XIX.

## STATEMENT OF EXPENDITURES FOR OPERATION OF WATER SYSTEM, INCLUDING INTEREST, DURING THE YEAR 1909.

| CLASSIFICATION | | AMOUNT | PER CENT. |
|---|---|---|---|
| **GENERAL SUPERINTENDENCE:** | | | |
| Salaries | $ 26,983.01 | | |
| Expenses | 3,870.41 | $ 30,853.42 | 1.6 |
| **ENGINEERING DIVISION:** | | | |
| Salaries | $ 38,054.90 | | |
| Expenses | 13,042.56 | 51,097.46 | 2.7 |
| **CRIBS:** | | | |
| Two-Mile | $ 16,294.94 | | |
| Four-Mile | 5,075.56 | | |
| Lake View | 5,409.48 | | |
| Hyde Park | 5,919.34 | | |
| Carter H. Harrison | 7,200.67 | 39,899.99 | 2.1 |
| Tug Service | | 12,395.29 | .7 |
| **PUMPING STATIONS:** | | | |
| 14th Street | $ 92,534.72 | | |
| 68th Street | 121,705.72 | | |
| 22nd Street | 94,595.86 | | |
| Chicago Avenue | 104,632.95 | | |
| Springfield Avenue | 94,120.28 | | |
| Central Park Avenue | 90,173.12 | | |
| Harrison Street | 47,782.87 | | |
| Lake View | 74,419.12 | | |
| Washington Heights | 13,743.90 | | |
| Norwood Park | 5,394.74 | | |
| Rogers Park | 14,207.64 | 753,310.92 | 39.5 |
| **ASSESSMENT AND COLLECTION OF WATER RATES:** | | | |
| Salaries | $270,283.22 | | |
| Expenses | 48,901.61 | 319,184.83 | 16.7 |
| Services of City Departments | | 240,940.03 | 12.6 |
| Interest on Bonds, Certificates and Judgments | | 274,855.72 | 14.4 |
| Costs on Judgments | | 109.30 | |
| Damage to property | | 16,466.78 | .9 |
| Fullerton Avenue Sewerage Pumping Station | | 18,759.29 | 1.0 |
| Carter H. Harrison Sr. Intercepting Sewer Pumping Station | | 50,078.20 | 2.6 |
| Lawrence Avenue Intercepting Sewer Pumping Station | | 30,948.39 | 1.6 |
| Water Works Shops, General Salaries and Expenses | | 21,118.53 | 1.1 |
| Water Waste Surveys | | 47,758.88 | 2.5 |
| Total | | $1,907,777.03 | 100. |

## TABLE No. XX.

## STATEMENT OF EXPENDITURES FOR REPAIRS AND RENEWALS OF WATER WORKS PROPERTY AND EQUIPMENT DURING THE YEAR 1909.

| CLASSIFICATION | | AMOUNT | PER CENT |
|---|---|---|---|
| CRIBS: | | | |
| Two-mile | $ 1,277.09 | | |
| Four-mile | 1,042.17 | | |
| Lake View | 1,205.88 | | |
| Hyde Park | 3,078.09 | | |
| Carter H. Harrison | 897.91 | $ 7,501.14 | .9 |
| TUNNELS | | 7,258.72 | .8 |
| PUMPING STATIONS: | | | |
| 14th Street | $ 18,005.67 | | |
| 68th Street | 18,721.56 | | |
| 22nd Street | 11,229.72 | | |
| Chicago Avenue | 19,546.01 | | |
| Springfield Avenue | 15,438.87 | | |
| Central Park Avenue | 17,574.43 | | |
| Harrison Street | 6,606.89 | | |
| Lake View | 10,351.39 | | |
| Washington Heights | 1,510.38 | | |
| Norwood Park | 619.40 | | |
| Rogers Park | 3,943.17 | 123,547.4 | 14.6 |
| WATER PIPE EXTENSION: | | | |
| Mains, Hydrants and Valves | $535,181.99 | | |
| Service Pipes, Taps, Shut-off Boxes, etc. | 75,281.01 | | |
| Pipe and District Yards | 522.62 | 610,985.62 | 71.9 |
| METERS | $ 89,654.79 | | |
| METER REPAIR SHOPS, TESTING PLANT AND EQUIPMENT | 95.23 | 89,750.02 | 10.6 |
| FULLERTON AVENUE SEWERAGE PUMPING STATION | | 1,811.29 | .2 |
| CARTER H. HARRISON, SR., INTERCEPTING SEWER PUMPING STATION | | 3,868.56 | .4 |
| LAWRENCE AVENUE INTERCEPTING SEWER PUMPING STATION | | 684.16 | .1 |
| PROTECTION OF STREET ENDS | | 4,362.49 | .5 |
| Total | | $849,769.49 | 100 |

## TABLE No. XXI.

### STATEMENT OF EXPENDITURES FOR ADDITIONS, EXTENSIONS AND BETTERMENTS OF WATER WORKS PROPERTY AND EQUIPMENT DURING THE YEAR 1909.

| CLASSIFICATION | | AMOUNT | PER CENT. |
|---|---|---|---|
| Cribs | | ............ | .......... |
| **LAKE TUNNELS:** | | | |
| One 14-foot tunnel from Hyde Park Crib to 73rd Street and Railroad Avenue | | $502,995.45 | 27.7 |
| **LAND TUNNELS:** | | | |
| One 9-foot tunnel from 104th Street and Stewart Avenue to State and 73rd Streets; one 12-foot tunnel from State and 73rd Streets to Yates Avenue, and one 14-foot tunnel from Yates Avenue to Railroad Avenue | $217,599.40 | | |
| One 8-foot tunnel from Chicago Avenue to 22nd Street Pumping Station | 48,385.03 | 265,984.43 | 14.7 |
| Water Pipe Tunnels | | ............ | .......... |
| **PUMPING STATIONS:** | | | |
| 14th Street | | | |
| 68th Street | 8,709.46 | | |
| 22nd Street | 4,180.52 | | |
| Chicago Avenue | 36,889.55 | | |
| Springfield Avenue | 2,390.55 | | |
| Central Park Avenue | 3,567.47 | | |
| Harrison Street | | | |
| Lake View | 65,812.62 | | |
| Washington Heights | | | |
| Norwood Park | | | |
| Roseland | 67,874.50 | | |
| Rogers Park | 17,384.63 | | |
| Englewood | 55.23 | 206,864.53 | 11.4 |
| **WATER PIPE EXTENSION:** | | | |
| Mains, Hydrants and Valves | $573,759.04 | | |
| Service Pipes, Taps, etc. | 92.11 | | |
| Pipe and District Yards | 1,527.31 | 575,378.46 | 31.7 |
| Meters | | 62,385.38 | 3.4 |
| Meter Repair Shop and Testing Plant | | ............ | .......... |
| Water Works Shops at 22nd Street and Ashland Avenue | | 6,795.12 | .4 |
| Water Works Construction and Repair Shops at 14th Street and Indiana Avenue | | ............ | .......... |
| Rogers Park Water System | | 60,500.00 | 3.3 |
| Carter H. Harrison, Sr., Intercepting Sewer Pumping Station | | 39,780.43 | 2.2 |
| Lawrence Avenue Intercepting Sewer Pumping Station | | 44,407.23 | 2.5 |
| Intercepting Sewer System | | 47,830.72 | 2.7 |
| Total | | $1,812,921.75 | 100. |

## TABLE No. XXII.

## COMPARATIVE STATEMENT OF EXPENDITURES FOR OPERATION OF WATER SYSTEM, INCLUDING INTEREST FOR THE YEARS 1906 to 1909, INCLUSIVE.

| CLASSIFICATION | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|
| General superintendence | $ 23,008.39 | $ 28,508.81 | $ 31,069.91 | $ 30,853.42 |
| Engineering division | 27,315.72 | 37,627.80 | 38,256.69 | 51,097.46 |
| Cribs | 30,653.71 | 38,810.83 | 39,030.31 | 39,899.90 |
| Tug service | 16,981.54 | 12,843.31 | 12,540.08 | 12,395.29 |
| Pumping stations | 702,683.01 | 766,813.70 | 792,965.12 | 753,310.92 |
| Assessment and collection of water rates | 232,240.08 | 284,945.64 | 292,204.01 | 319,184.83 |
| Services of city departments | 151,466.01 | 218,752.96 | 250,346.26 | 240,940.03 |
| Interest on bonds, certificates and judgments | 165,602.31 | 183,694.85 | 261,438.09 | 274,855.72 |
| Costs on judgments | 316.45 | 190.80 | 123.05 | 109.30 |
| Damage to property | 50,619.04 | 9,233.00 | 6,585.00 | 16,466.78 |
| Fullerton avenue sewerage pumping station | 18,117.83 | 20,891.43 | 16,796.60 | 18,759.29 |
| Carter H. Harrison, Sr., intercepting sewer pumping station | 26,813.74 | 42,400.69 | 57,592.16 | 50,078.20 |
| Lawrence avenue intercepting sewer pumping station | .............. | 191.10 | 21,722.75 | 30,948.39 |
| Rogers Park Water Co., hydrant rentals | 5,093.81 | 9,502.45 | .............. | .............. |
| Removal of Drake fountain | 3,000.00 | .............. | .............. | .............. |
| Water waste surveys | .............. | 12,223.87 | 34,947.27 | 47,758.88 |
| Taxes on grower property | .............. | 2,049.12 | .............. | .............. |
| Water works shops, general salaries and expenses | .............. | .............. | .............. | 21,118.53 |
| Miscellaneous | 94.31 | .............. | .............. | .............. |
| Total | $ 1,456,005.95 | $ 1,668,180.45 | $ 1,859,217.30 | $ 1,907,777.03 |

## TABLE No. XXIII.

### COMPARATIVE STATEMENT OF EXPENDITURES FOR REPAIRS AND RENEWALS OF WATER WORKS PROPERTY AND EQUIPMENT, FOR THE YEARS 1906 TO 1909 INCLUSIVE.

| CLASSIFICATION. | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|
| Cribs | $ 2,747.08 | $ 12,457.67 | $ 7,365.56 | $ 7,501.14 |
| Tunnels | ............ | ............ | ............ | 7,258.72 |
| Pumping Stations | 138,946.48 | 132,191.54 | 153,400.77 | 123,547.49 |
| Mains, Hydrants and Valves | 305,523.13 | 431,893.12 | 511,594.58 | 535,181.99 |
| Service Pipes, Taps, Shut-off Boxes, etc. | 69,098.78 | 102,803.32 | 69,373.13 | 75,281.01 |
| Pipe and District Yards | ............ | ............ | 192.08 | 522.62 |
| Meters | 48,962.13 | 68,557.58 | 79,016.66 | 89,654.79 |
| Meter Repair Shops, Testing Plants and Equipment | 4,473.45 | 384.75 | 849.14 | 95.23 |
| Carter H. Harrison, Sr., Intercepting Sewer Pumping Station | 258.00 | ............ | 1,820.20 | 3,868.56 |
| Lawrence Ave. Intercepting Sewer Pumping Station | ............ | ............ | 334.46 | 684.16 |
| Fullerton Ave. Sewerage Pumping Station | 1,995.22 | 3,480.36 | 3,923.95 | 1,811.29 |
| Water Works Property Rented to Private Parties | 2,196.82 | ............ | ............ | 4,362.49 |
| Total | $ 574,201.09 | $ 751,768.34 | $ 827,870.53 | $ 849,769.49 |

## TABLE No. XXIV.

### COMPARATIVE STATEMENT OF EXPENDITURES FOR ADDITIONS, EXTENSIONS AND BETTERMENTS OF WATER WORKS PROPERTY AND EQUIPMENT FOR THE YEARS 1906 TO 1909 INCLUSIVE.

| CLASSIFICATION | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|
| Cribs | $ 25,862.18 | $ 3,117.17 | ............ | ............ |
| Lake Tunnels | 6,306.75 | 211,093.70 | $ 487,471.86 | $ 502,995.45 |
| Land Tunnels | 301,410 12 | 854,573.50 | 1,193,921.15 | 265,984.43 |
| Water Pipe Tunnels | 32,473.23 | 173,591.42 | 11,000.00 | ............ |
| Pumping Stations | 291,101.97 | 351,804.76 | 375,716.66 | 206,864.53 |
| Mains, Hydrants and Valves | 1,070,744.00 | 1,406,834.95 | 636,136.10 | 573,759.04 |
| Service Pipes, Taps, Shut-off Boxes, etc. | 161,417.56 | 23,588.10 | 961.77 | 92.11 |
| Pipe and District Yards | 8,307.69 | 30,109.30 | 8,416.01 | 1,527.31 |
| Meters | 149,648.59 | 211,703.46 | 47,511.90 | 62,385.38 |
| Meter Repair Shops and Testing Plants | 3,382.60 | 8,131.70 | 12,453 54 | ............ |
| General Repair Shops | 12,444.63 | 15,108 23 | 6,640.32 | 6,795.12 |
| Grower Property | 218,095.86 | ............ | ............ | ............ |
| Fullerton Ave. Sewerage Pumping Station | ............ | ............ | 1,775.61 | ............ |
| Rogers Park Water System (Purchase Price) |  | 50,238.16 | 59,579.45 | 60,500.00 |
| Intercepting Sewer System | 877,150.02 | 644,651.03 | 606,816.50 | 132,018.38 |
| Total | $3,158,345.20 | $3,984,545.48 | $3,448,400.87 | $1,812,921.75 |

# TABLE No. XXV.

## CRIBS.

## DETAILED STATEMENT OF EXPENDITURES FOR OPERATION AND REPAIRS FOR THE YEAR 1909.

| | OPERATION | | | | | | REPAIRS | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | Salaries | Meals | Coal, Wood and Oil | Supplies | Miscellaneous | Total Operation | | |
| Two-mile Crib | $12.473.80 | $3,157.20 | $351.10 | $310.98 | $ 1.86 | $16,294.94 | $1,277.09 | $17,572.03 |
| Four-mile Crib | 3,452.48 | 916.20 | 354.25 | 329.86 | 22.77 | 5,075.56 | 1,042.17 | 6,117.73 |
| Lake View Crib | 3.760.68 | 1.028.70 | 318.00 | 301.80 | .30 | 5,409.48 | 1,205.88 | 6,615.36 |
| Hyde Park Crib | 3,796.98 | 1,319.10 | 38.75 | 764.51 | ........ | 5,919.34 | 3,078.09 | 8,997.43 |
| Carter H. Harrison Crib | 5,247.15 | 1,170.00 | 429.25 | 354.27 | ........ | 7,200.67 | 897.91 | 8,098.58 |
| Total | $28,731.09 | $7,591.20 | $1,491.35 | $2,061.42 | $24.93 | $39,899.99 | $7,501.14 | $47,401.13 |
| Tug Service | | | | | | | | 12,395.29 |
| Total 1909 | | | | | | | | $59,796.42 |
| Total 1908 | | | | | | | | 59,535.95 |
| Total 1907 | | | | | | | | 64,111.81 |
| Total 1906 | | | | | | | | 50,382.33 |

## TABLE No. XXVI.

### PUMPING STATIONS.

### DETAILED STATEMENT OF EXPENDITURES FOR OPERATION DURING THE YEAR 1909.

| PUMPING STATIONS | SALARIES | COAL | OIL | WASTE | GREASE | PACKING | TOOLS | MISCELLANEOUS | TOTAL | PER CENT |
|---|---|---|---|---|---|---|---|---|---|---|
| Chicago Avenue | $ 53,973.75 | $ 43,262.64 | $ 774.93 | $ 501.92 | $ 363.41 | $ 1,031.81 | $ 204.28 | $ 4,520.21 | $104,632.95 | 13.9 |
| Fourteenth Street | 40,000.96 | 45,561.93 | 1,081.62 | 346.12 | 78.93 | 1,294.17 | 227.62 | 3,943.37 | 92,534.72 | 12.3 |
| Harrison Street | 26,110.62 | 17,843.12 | 310.82 | 167.18 | 96.00 | 659.73 | 185.54 | 2,409.86 | 47,782.87 | 6.3 |
| Lake View | 38,602.56 | 31,722.06 | 729.38 | 345.74 | 437.78 | 1,460.34 | 190.05 | 931.21 | 74,419.12 | 9.9 |
| Twenty-second Street | 45,834.15 | 44,374.99 | 431.21 | 297.23 | 150.37 | 206.13 | 495.33 | 2,806.45 | 94,595.86 | 12.6 |
| Sixty-eighth Street | 66,268.66 | 46,833.59 | 1,016.54 | 414.57 | 222.84 | 2,264.23 | 346.85 | 4,338.44 | 121,705.72 | 16.1 |
| Central Park Avenue | 43,599.89 | 40,232.19 | 848.52 | 357.20 | 345.91 | 1,395.06 | 360.54 | 3,033.81 | 90,173.12 | 12.0 |
| Springfield Avenue | 48,951.09 | 40,187.51 | 1,060.35 | 489.65 | 175.20 | 2,208.19 | 449.04 | 599.25 | 94,120.28 | 12.5 |
| Norwood Park | 4,063.71 | 1,111.00 | 19.37 | ............ | ............ | 15.45 | 28.56 | 156.65 | 5,394.74 | .7 |
| Washington Heights | 9,553.26 | 3,458.56 | 216.06 | 27.69 | ............ | 44.02 | 49.21 | 395.10 | 13,743.90 | 1.8 |
| Rogers Park | 7,559.11 | 5,710.34 | 64.62 | 59.85 | ............ | 256.13 | 59.91 | 497.68 | 14,207.64 | 1.9 |
| Total | $ 384,487.76 | $ 320,297.93 | $ 6,583.42 | $ 3,007.15 | $ 1,870.44 | $ 10,835.26 | $ 2,596.93 | $ 23,632.03 | $ 753,310.92 | 100. |

## TABLE No. XXVII.

## PUMPING STATIONS.

### DETAILED STATEMENT OF EXPENDITURES FOR REPAIRS AND RENEWALS DURING THE YEAR 1909.

| Pumping Stations | Buildings and Grounds | Engines and Pumps | Boilers and Furnaces | Piping and Steamfitting | Coal and Ash Handling Plant | Electric Lighting System | Miscel-laneous | Total | Per Cent. |
|---|---|---|---|---|---|---|---|---|---|
| Chicago Avenue .......... | $4,378.85 | $3,290.36 | $7,728.55 | $3,645.74 | $ 103.18 | $ 372.57 | $ 26.76 | $19,546.01 | 15.8 |
| Fourteenth Street........ | 2,769.72 | 7,645.30 | 3,669.68 | 2,287.56 | 1,057.70 | 357.74 | 217.97 | 18,005.67 | 14.6 |
| Harrison Street........... | 746.02 | 2,307.48 | 779.74 | 2,655.15 | 98.90 | .............. | 19.60 | 6,606.89 | 5.3 |
| Lake View................ | 2,460.49 | 2,923.88 | 1,680.13 | 2,160.21 | 7.31 | 1,085.69 | 33.68 | 10,351.39 | 8.4 |
| Twenty-second Street.... | 2,215.29 | 3,756.56 | 3,791.20 | 1,023.97 | 42.50 | 178.94 | 221.26 | 11,229.72 | 9.1 |
| Sixty-eighth Street....... | 3,313.04 | 7,368.94 | 2,563.60 | 2,996.48 | 1,124.03 | 1,172.70 | 182.77 | 18,721.56 | 15.2 |
| Central Park Avenue..... | 1,551.50 | 7,215.13 | 4,239.54 | 3,320.28 | 98.95 | 1,028.77 | 120.26 | 17,574.43 | 14.2 |
| Springfield Avenue. ..... | 5,786.67 | 3,427.73 | 3,196.99 | 2,667.77 | 60.81 | 203.15 | 95.75 | 15,438.87 | 12.5 |
| Norwood Park............ | 184.46 | 284.56 | 134.58 | 12.55 | ............... | .............. | 3.25 | 619.40 | .5 |
| Washington Heights..... | 340.78 | 535.57 | 83.71 | 17.67 | ............... | .............. | 532.65 | 1,510.38 | 1.2 |
| Rogers Park.............. | 1,718.27 | 1,021.18 | 574.41 | 374.57 | ............... | 161.43 | 93.31 | 3,943.17 | 3.2 |
| Total. ................ | $25,465.09 | $39,776.69 | $28,442.13 | $21,161.95 | $2,593.38 | $4,560.99 | $1,547.26 | $123,547.49 | 100. |

## TABLE No. XXVIII.

### PUMPING STATIONS.

### DETAILED STATEMENT OF EXPENDITURES FOR ADDITIONS, EXTENSIONS AND BETTERMENTS DURING THE YEAR 1909.

| PUMPING STATIONS | Buildings and Grounds | Engines and Pumps | Boilers and Furnaces | Piping and Steamfitting | Coal and Ash Handling Plant | Electric Lighting System | Miscellaneous | TOTAL | Per Cent. |
|---|---|---|---|---|---|---|---|---|---|
| Chicago Avenue | $ 6,832.55 | $ 30,057.00 | | | | | | $ 36,889.55 | 17.9 |
| Fourteenth Street | | | | | | | | | |
| Harrison Street | | | | | | | | | |
| Lake View | 13,892.13 | 20,011.64 | $ 130.26 | $ 1,735.71 | | | $ 42.85 | 65,812.62 | 31.8 |
| Twenty-second Street | 4,180.52 | | | | | | | 4,180.52 | 2.0 |
| Sixty-eighth Street | 3,418.72 | 3,984.40 | 1,306.34 | | | | | 8,709.46 | 4.2 |
| Central Park Avenue | | 414.99 | 44.00 | | $ 639.00 | | 2,469.48 | 3,567.47 | 1.7 |
| Springfield Avenue | | 315.32 | 1,649.95 | | | | 395.28 | 2,390.55 | 1.2 |
| Norwood Park | | | | | | | | | |
| Washington Heights | | | | | | | | | |
| Rogers Park | 303.38 | | 12,164.05 | | | | 4,917.20 | 17,384.63 | 8.4 |
| Roseland | 67,318.83 | 555.67 | | | | | | 67,874.50 | 32.8 |
| Total | $ 125,946.13 | $ 55,369.02 | $ 15,294.60 | $ 1,735.74 | $ 639.00 | | $ 7,824.81 | $206,809.30 | 100. |

## TABLE No. XXIX.

## PUMPING STATIONS.

## COMPARATIVE STATEMENT OF EXPENDITURES FOR OPERATION DURING THE YEARS 1902 TO 1909 INCLUSIVE.

| PUMPING STATIONS | 1902 | 1903 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|---|---|---|---|
| Chicago Avenue | $92,591.56 | $104,071.47 | $108,376.42 | $108,815.70 | $103,320.83 | $101,861.42 | $101,577.08 | $104,632.95 |
| Fourteenth Street | 85,545.16 | 99,464.20 | 101,125.49 | 99,601.40 | 89,961.44 | 100,385.55 | 102,919.49 | 92,534.72 |
| Harrison Street | 47,458.04 | 50,955.01 | 51,044.67 | 52,027.61 | 50,972.11 | 51,308.58 | 48,503.57 | 47,782.87 |
| Lake View | 48,103.98 | 55,440.54 | 59,931.05 | 62,254.27 | 69,172.86 | 73,471.57 | 80,610.57 | 74,419.12 |
| Twenty-second Street | 69,710.47 | 81,184.90 | 89,202.80 | 90,914.74 | 91,581.06 | 98,781.52 | 98,983.25 | 94,585.86 |
| Sixty-eighth Street | 78,715.39 | 92,711.57 | 102,124.35 | 112,993.73 | 131,694.40 | 126,178.27 | 131,399.62 | 121,705.72 |
| Central Park Avenue | 48,013.76 | 67,061.72 | 69,112.97 | 76,227.16 | 76,973.29 | 97,563.86 | 97,317.29 | 90,173.12 |
| Springfield Avenue | 47,477.71 | 52,332.05 | 59,799.37 | 70,440.73 | 69,815.93 | 88,256.87 | 96,929.88 | 94,130.28 |
| Norwood Park | 4,207.87 | 4,098.30 | 4,557.70 | 4,703.34 | 5,444.44 | 5,306.28 | 5,682.12 | 5,394.74 |
| Washington Heights | 6,319.92 | 8,232.35 | 8,787.32 | 9,312.02 | 13,746.65 | 15,011.45 | 13,766.15 | 13,743.90 |
| Rogers Park | ........ | ........ | ........ | ........ | ........ | 8,688.33 | 15,276.10 | 14,207.64 |
| Total | $528,143.86 | $615,552.11 | $654,062.14 | $687,290.70 | $702,683.01 | $766,813.70 | $792,965.12 | $753,310.92 |
| Percentage of increase of expenditures over preceding year | ........ | 16.6 | 6.2 | 5.1 | 2.2 | 9.1 | 3.4 | ........ |
| Percentage of decrease of expenditures from preceding year | ........ | ........ | ........ | ........ | ........ | ........ | ........ | 5.2 |
| Millions of gals. of water pumped | 130,892 | 137,515 | 146,310 | 150,253 | 160,184 | 166,979 | 172,506 | 175,939 |
| Percentage of increase of pumping over preceding year | ........ | 5.0 | 6.4 | 2.7 | 6.6 | 4.2 | 3.3 | 1.9 |
| Expenditures for operation of pumping stations per thousand gallons | $ .00403 | $ .00447 | $ .00447 | $ .00457 | $ .00437 | $ .00459 | $ .00459 | $ .00428 |

NOTE:—Expenditures of 1909 do not include coal contract reserves amounting to $40,165.50, payment of which is deferred to 1910. By adding this amount to the total expenditures of 1909, for comparison with prior years, the total for operation of pumping stations per thousand gallons amounts to $ .00458.

## TABLE No. XXX.

### PUMPING STATIONS.

### COMPARATIVE STATEMENT OF EXPENDITURES FOR REPAIRS AND RENEWALS DURING THE YEARS 1902 TO 1909 INCLUSIVE.

| PUMPING STATIONS | 1902 | 1903 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|---|---|---|---|
| Chicago Avenue | $ 14,722.88 | $ 11,997.56 | $ 17,980.99 | $ 18,698.01 | $ 24,591.26 | $ 19,002.90 | $ 18,248.42 | $ 19,546.01 |
| Fourteenth Street | 22,410.51 | 19,577.84 | 16,803.00 | 36,646.73 | 29,750.19 | 14,297.73 | 21,980.29 | 18,005.67 |
| Harrison Street | 5,324.32 | 5,910.65 | 7,457.12 | 10,650.60 | 5,044.77 | 7,940.52 | 10,698.17 | 6,606.89 |
| Lake View | 16,757.42 | 7,017.99 | 11,789.58 | 8,992.74 | 10,853.50 | 9,473.77 | 9,394.42 | 10,351.39 |
| Twenty-second Street | 11,357.57 | 14,661.74 | 11,960.59 | 9,749.77 | 11,256.15 | 25,278.01 | 21,363.19 | 11,229.72 |
| Sixty-eighth Street | 19,482.06 | 14,119.06 | 19,104.67 | 21,346.39 | 17,184.83 | 22,852.53 | 24,954.19 | 18,721.56 |
| Central Park Avenue | 11,237.91 | 11,372.22 | 10,098.31 | 23,703.47 | 15,608.86 | 16,784.98 | 23,423.85 | 17,574.43 |
| Springfield Avenue | 6,159.19 | 14,149.09 | 12,230.51 | 14,479.17 | 22,558.99 | 13,603.72 | 16,511.36 | 15,438.87 |
| Norwood Park | 736.90 | 200.18 | 384.25 | 442.28 | 186.41 | 1,721.24 | 2,165.31 | 619.40 |
| Washington Heights | 2,354.65 | 747.69 | 616.07 | 1,276.84 | 1,911.52 | 382.42 | 1,901.65 | 1,510.38 |
| Rogers Park | ........... | ........... | ........... | ........... | ........... | 853.72 | 3,759.92 | 3,943.17 |
| Total | $ 110,543.41 | $ 99,754.02 | $ 108,425.09 | $ 145,986.00 | $ 138,946.48 | $ 132,191.54 | $ 153,400.77 | $ 123,547.49 |
| Percentage of increase of expenditures over preceding year |  |  | 8.7 | 34.6 |  |  | 16. |  |
| Percentage of decrease of expenditures from preceding year |  | 9.7 |  |  | 4.8 | 4.8 |  | 19.4 |
| Millions of gallons of water pumped | 130,892 | 137,515 | 146,310 | 150,253 | 160,184 | 166,979 | 172,506 | 175,939 |
| Expenditures for repairs and renewals of pumping stations per thousand gallons | $ .000844 | $ .000725 | $ .000741 | $ .000971 | $ .000867 | $ .000791 | $ .000889 | $ .000741 |

## TABLE No. XXXI.

### PUMPING STATIONS.

### COMPARATIVE STATEMENT OF TOTAL ORDINARY EXPENDITURES FOR OPERATION AND REPAIRS AND RENEWALS DURING THE YEARS 1902 TO 1909, INCLUSIVE.

| PUMPING STATIONS | 1902 | 1903 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
|---|---|---|---|---|---|---|---|---|
| Chicago Avenue | $ 107,314.41 | $ 116,069.03 | $ 126,357.41 | $ 127,513.71 | $ 127,912.09 | $ 120,864.32 | $ 119,825.50 | $ 121,178.96 |
| Fourteenth Street | 107,955.67 | 119,012.04 | 117,928.49 | 136,248.13 | 119,711.63 | 114,683.28 | 124,899.78 | 110,540.39 |
| Harrison Street | 52,782.56 | 56,865.66 | 58,501.79 | 62,678.21 | 56,016.88 | 59,249.10 | 59,201.74 | 51,389.76 |
| Lake View | 64,861.40 | 62,458.53 | 71,720.60 | 71,247.01 | 80,026.36 | 82,945.34 | 90,004.99 | 84,770.51 |
| Twenty-second Street | 81,068.04 | 95,846.61 | 101,163.39 | 100,664.51 | 102,837.21 | 124,059.53 | 120,346.44 | 105,825.58 |
| Sixty-eighth Street | 98,197.45 | 106,830.63 | 121,229.02 | 134,340.12 | 148,879.23 | 149,030.80 | 155,353.81 | 140,427.28 |
| Central Park Avenue | 59,251.67 | 78,434.94 | 79,211.28 | 99,930.63 | 92,582.15 | 114,348.84 | 120,741.14 | 107,747.55 |
| Springfield Avenue | 53,636.90 | 66,481.14 | 72,029.91 | 84,919.60 | 92,374.92 | 101,860.59 | 113,441.24 | 109,559.15 |
| Norwood Park | 4,944.77 | 4,298.48 | 4,941.95 | 5,145.62 | 5,630.85 | 7,027.52 | 7,847.43 | 6,014.14 |
| Washington Heights | 8,674.57 | 8,980.04 | 9,403.39 | 10,588.86 | 15,658.17 | 15,393.87 | 15,667.80 | 15,254.28 |
| Rogers Park | ........ | ........ | ........ | ........ | ........ | 9,542.05 | 19,036.02 | 18,150.81 |
| Total | $ 638,687.27 | $ 715,306.13 | $ 762,487.23 | $ 833,276.70 | $ 841,629.49 | $ 899,005.24 | $ 946,365.89 | $ 876,858.41 |
| Percentage of increase of expenditures over preceding year | ........ | 12.0 | 6.6 | 9.3 | 1.0 | 6.8 | 5.2 | ........ |
| Percentage of decrease of expenditures from preceding year | ........ | ........ | ........ | ........ | ........ | ........ | ........ | 7.9 |
| Millions of gallons of water pumped | 130,892 | 137,515 | 146,310 | 150,253 | 160,184 | 166,979 | 172,506 | 175,939 |
| Percentage of increase of pumpage over preceding year | ........ | 5.0 | 6.4 | 2.7 | 6.6 | 4.2 | 3.3 | 1.9 |
| Expenditures for operation and repairs and renewals of pumping stations per thousand gallons | $ .00488 | $ .00520 | $ .00521 | $ .00554 | $ .00525 | $ .00538 | $ .00548 | $ .00498 |

NOTE:—Expenditures of 1909 do not include coal contract reserves, amounting to $40,165.50, payment of which is deferred to 1910. By adding this amount to the total expenditures of 1909, for comparison with prior years, the total for operation and repairs of pumping stations per thousand gallons amounts to $.00521.

## TABLE No. XXXII.

### MAINS, HYDRANTS AND VALVES.

### DETAILED STATEMENT OF EXPENDITURES DURING THE YEAR 1909.

| | Repairs and Renewals | Additions, Extensions and Betterments | Total |
|---|---|---|---|
| Salaries | $421,145.84 | $274,685.83 | $695,831.67 |
| Teaming | 54,104.67 | 32,847.27 | 86,951.94 |
| Iron Pipe | 4,986.16 | 110,095.18 | 115,081.34 |
| Lead | 1,614.17 | 13,186.05 | 14,800.22 |
| Hydrants and Valves | * | 56,174.79 | 56,174.79 |
| Special Castings, Covers, etc | 7,806.93 | 33,309.09 | 41,116.02 |
| Brick, Cement, Sand and Sewer Pipe | 2,348.74 | 10,502.18 | 12,850.92 |
| Lumber | 1,176.24 | 2,670.85 | 3,847.09 |
| Tools | 1,052.45 | 3,180.50 | 4,232.95 |
| Replacing Pavements | 14,812.52 | 5,704.33 | 20,516.85 |
| Pipe and District Yards Property and Equipment | 517.98 | 1,456.01 | 1,973.99 |
| Office Expense—Stationery, etc. | 823.15 | 2,409.03 | 3,232.18 |
| Special Assessment Refunds | | 17,317.53 | 17,317.53 |
| Special Assessment Public Benefits | | 4,933.74 | 4,933.74 |
| Sundries | 25,315.76 | 6,813.97 | 32,129.73 |
| Total 1909 | $535,704.61 | $ 575,286.35 | $1,110,990.96 |
| Total 1908 | 511,786.66 | 644,552.11 | 1,156,338.77 |
| Total 1907 | 431,893.12 | 1,436,944.25 | 1,868,837.37 |
| Total 1906 | 305,567.21 | 1,070,744.00 | 1,376,267.13 |

*Included under Sundries.

## TABLE No. XXXIII.

### METER INSTALLATION AND REPAIRS.

### DETAILED STATEMENT OF EXPENDITURES DURING THE YEAR 1909.

| | Installation | Repairs and Renewals | Total |
|---|---|---|---|
| Salaries | $ 11,406.23 | $ 59,626.42 | $ 71,032.65 |
| Teaming | 3,701.38 | 17,110.80 | 20,812.18 |
| Meters and fish traps | 37,494.79 | 78.00 | 37,572.79 |
| Meter parts | 4,159.40 | 8,880.89 | 13,040.29 |
| Covers, frames, connections and miscellaneous material | 4,099.89 | 984.26 | 5,084.15 |
| Solder, lead and lead pipe | 316.48 | 127.70 | 444.18 |
| Lumber | 377.14 | 960.86 | 1,338.00 |
| Brick, cement and sand | 318.72 | 132.48 | 451.20 |
| Tools | | 278.21 | 278.21 |
| Meter repair shops, testing plant and equipment | | 95.23 | 95.23 |
| Office expense, stationery, etc. | 63.24 | 409.84 | 473.08 |
| Sundries | 448.11 | 1,065.33 | 1,513.44 |
| Total, 1909 | $ 62,385.38 | $ 89,750.02 | $ 152,135.40 |
| " 1908 | 59,965.44 | 79,865.80 | 139,831.24 |
| " 1907 | 219,835.16 | 68,942.33 | 288,777.49 |
| " 1906 | 153,031.19 | 53,435.58 | 206,466.77 |

Salaries..
Teaming .
Iron Pipe
Lead .....
Hydrants
Special C
Brick, Ce
Lumber .
Tools.....
Replacing
Pipe and
ment..
Office Ex
Special A
Special A
Sundries

Total
Total
Total
Total

*Incl

Salaries
Teamin
Meters a
Meter p
Covers.
mat
Solder,
Lumber
Brick, c
Tools..
Meter r
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Salar
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## TABLE No. XXXVI.

## TABLE OF PERCENTAGE OF DEPRECIATION.

Compiled by J. A. Kleine, Chief Accountant.

| Years in Use | PER CENT. OF DEPRECIATION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 60 Year Life | 55 Year Life | 50 Year Life | 45 Year Life | 40 Year Life | 35 Year Life | 30 Year Life | 25 Year Life | 20 Year Life | 15 Year Life | 10 Year Life | 5 Year Life |
| 1 | .7 | .9 | 1.0 | 1.2 | 1.5 | 1.8 | 2.3 | 2.9 | 3.9 | 5.6 | 8.9 | 19.0 |
| 2 | 1.5 | 1.8 | 2.1 | 2.5 | 3.0 | 3.7 | 4.6 | 5.9 | 7.9 | 11.3 | 18.1 | 38.5 |
| 3 | 2.3 | 2.7 | 3.2 | 3.8 | 4.6 | 5.6 | 7.0 | 9.0 | 12.0 | 17.2 | 27.5 | 58.5 |
| 4 | 3.1 | 3.6 | 4.3 | 5.1 | 6.2 | 7.6 | 9.5 | 12.2 | 16.3 | 23.2 | 37.1 | 79.0 |
| 5 | 3.9 | 4.5 | 5.4 | 6.4 | 7.8 | 9.6 | 12.0 | 15.4 | 20.6 | 29.3 | 46.9 | 100. |
| 6 | 4.7 | 5.5 | 6.5 | 7.8 | 9.5 | 11.6 | 14.6 | 18.7 | 25.0 | 35.6 | 57.0 | |
| 7 | 5.5 | 6.5 | 7.7 | 9.2 | 11.2 | 13.7 | 17.2 | 22.1 | 29.5 | 42.1 | 67.4 | |
| 8 | 6.4 | 7.5 | 8.9 | 10.7 | 13.0 | 15.9 | 19.9 | 25.6 | 34.2 | 48.7 | 78.0 | |
| 9 | 7.3 | 8.6 | 10.2 | 12.2 | 14.8 | 18.1 | 22.7 | 29.1 | 39.0 | 55.5 | 88.9 | |
| 10 | 8.2 | 9.7 | 11.5 | 13.7 | 16.6 | 20.4 | 25.5 | 32.8 | 43.9 | 62.5 | 100. | |
| 11 | 9.1 | 10.8 | 12.8 | 15.3 | 18.5 | 22.7 | 28.4 | 36.5 | 48.9 | 69.6 | | |
| 12 | 10.0 | 11.9 | 14.1 | 16.9 | 20.5 | 25.1 | 31.4 | 40.4 | 54.0 | 76.9 | | |
| 13 | 11.0 | 13.1 | 15.5 | 18.6 | 22.5 | 27.6 | 34.5 | 44.3 | 59.3 | 84.4 | | |
| 14 | 12.1 | 14.3 | 16.9 | 20.3 | 24.5 | 30.1 | 37.6 | 48.4 | 64.7 | 92.1 | | |
| 15 | 13.2 | 15.5 | 18.4 | 22.0 | 26.6 | 32.6 | 40.8 | 52.5 | 70.2 | 100. | | |
| 16 | 14.3 | 16.8 | 19.9 | 23.8 | 28.8 | 35.3 | 44.1 | 56.7 | 75.9 | | | |
| 17 | 15.4 | 18.1 | 21.4 | 25.6 | 31.0 | 38.0 | 47.5 | 61.1 | 81.7 | | | |
| 18 | 16.5 | 19.4 | 23.0 | 27.5 | 33.2 | 40.8 | 51.0 | 65.5 | 87.6 | | | |
| 19 | 17.6 | 20.7 | 24.6 | 29.4 | 35.5 | 43.6 | 54.5 | 70.1 | 93.7 | | | |
| 20 | 18.8 | 22.1 | 26.2 | 31.3 | 37.9 | 46.5 | 58.2 | 74.8 | 100. | | | |
| 21 | 20.0 | 23.5 | 27.9 | 33.3 | 40.3 | 49.5 | 61.9 | 79.6 | | | | |
| 22 | 21.2 | 25.0 | 29.6 | 35.4 | 42.8 | 52.6 | 65.7 | 84.5 | | | | |
| 23 | 22.5 | 26.5 | 31.4 | 37.5 | 45.4 | 55.7 | 69.7 | 89.5 | | | | |
| 24 | 23.8 | 28.0 | 33.2 | 39.7 | 48.0 | 58.9 | 73.7 | 94.7 | | | | |
| 25 | 25.1 | 29.6 | 35.0 | 41.9 | 50.7 | 62.2 | 77.8 | 100. | | | | |
| 26 | 26.5 | 31.2 | 36.9 | 44.1 | 53.4 | 65.6 | 82.0 | | | | | |
| 27 | 27.9 | 32.8 | 38.9 | 46.5 | 56.2 | 69.0 | 86.4 | | | | | |
| 28 | 29.3 | 34.5 | 40.9 | 48.9 | 59.1 | 72.6 | 90.8 | | | | | |
| 29 | 30.8 | 36.2 | 42.9 | 51.3 | 62.1 | 76.2 | 95.3 | | | | | |
| 30 | 32.3 | 38.0 | 45.0 | 53.8 | 65.1 | 79.9 | 100. | | | | | |
| 31 | 33.8 | 39.8 | 47.2 | 56.4 | 68.2 | 83.7 | | | | | | |
| 32 | 35.4 | 41.7 | 49.4 | 59.1 | 71.4 | 87.7 | | | | | | |
| 33 | 37.0 | 43.6 | 51.7 | 61.8 | 74.7 | 91.7 | | | | | | |
| 34 | 38.7 | 45.5 | 54.0 | 64.5 | 78.1 | 95.8 | | | | | | |
| 35 | 40.4 | 47.5 | 56.3 | 67.4 | 81.5 | 100. | | | | | | |
| 36 | 42.1 | 49.6 | 58.8 | 70.3 | 85.0 | | | | | | | |
| 37 | 43.9 | 51.7 | 61.3 | 73.3 | 88.6 | | | | | | | |
| 38 | 45.8 | 53.9 | 63.8 | 76.2 | 92.3 | | | | | | | |
| 39 | 47.7 | 56.1 | 66.4 | 79.5 | 96.1 | | | | | | | |
| 40 | 49.6 | 58.3 | 69.1 | 82.7 | 100. | | | | | | | |
| 41 | 51.6 | 60.6 | 71.9 | 86.0 | | | | | | | | |
| 42 | 53.6 | 63.0 | 74.7 | 89.4 | | | | | | | | |
| 43 | 55.7 | 65.5 | 77.6 | 92.8 | | | | | | | | |
| 44 | 57.8 | 68.0 | 80.6 | 96.4 | | | | | | | | |
| 45 | 59.9 | 70.5 | 83.6 | 100. | | | | | | | | |
| 46 | 62.2 | 73.2 | 86.7 | | | | | | | | | |
| 47 | 64.5 | 75.9 | 89.9 | | | | | | | | | |
| 48 | 66.8 | 78.6 | 93.2 | | | | | | | | | |
| 49 | 69.2 | 81.5 | 96.6 | | | | | | | | | |
| 50 | 71.7 | 84.4 | 100. | | | | | | | | | |
| 51 | 74.2 | 87.3 | | | | | | | | | | |
| 52 | 76.8 | 90.4 | | | | | | | | | | |
| 53 | 79.5 | 93.5 | | | | | | | | | | |
| 54 | 82.2 | 96.7 | | | | | | | | | | |
| 55 | 85.0 | 100. | | | | | | | | | | |
| 56 | 87.8 | | | | | | | | | | | |
| 57 | 90.8 | | | | | | | | | | | |
| 58 | 93.8 | | | | | | | | | | | |
| 59 | 96.8 | | | | | | | | | | | |
| 60 | 100. | | | | | | | | | | | |

**Note:** The above table is based on sinking fund at annual compound interest at rate of 2½ per cent.

## TABLE No. XXXVII.

## STATEMENT OF OPERATION OF WATER WORKS SHOPS AND REPAIR DIVISION DURING THE YEAR 1909.

| | | |
|---|---|---|
| **Debit:** | | |
| Stock on hand January 1, 1909, available for construction and repair work as per inventory.................................... | $ 39,225.19 | |
| Expenditures during the year 1909 for labor, material and expense for construction and repair work including maintenance of property and equipment........................................ | 182,507.99 | |
| Total.................... | | $ 221,823.18 |
| **Credit:** | | |
| Revenue during the year 1909, as per warrants for collection rendered for labor performed and material furnished ............ | $ 165,342.12 | |
| Stock on hand December 31, 1909, available for construction and repair work as per inventory .................................. | 48,681.09 | |
| Total..................... | | 214,023.21 |
| Net loss during the year 1909.. .............. ......... | | 7,799.97 |
| Net loss during the year 1908.......................... | | 30,000.60 |
| Net gain during the year 1907 ......................... | | 17,085.69 |
| Net gain during the year 1906 ......................... | | 7,118.14 |

## TABLE No. XXXIX.

## STATEMENT OF ESTIMATED AMOUNTS NECESSARY TO CARRY EXISTING CONTRACTS DECEMBER 31, 1909, TO COMPLETION, INCLUDING UNPAID RESERVES OF SAME AND ALLOWANCE FOR ENGINEERING AND INSPECTION EXPENSE.

| BUREAUS | Water Fund | Corporate Fund | Total Contract Liability |
|---|---|---|---|
| Bureau of Engineering............. | $1,468,300.17 | ............ | $1,468,300.17 |
| Bureau of Water.... .............. | 1,729.11 | ............ | 1,729.11 |
| Bureau of Bridges and Harbor..... | ............ | $ 97,001.53 | 97,001.53 |
| Bureau of Streets ............ ..... | ............ | 38,855.36 | 38,855,36 |
| Bureau of Sewers.................. | ............ | 2,044.96 | 2,044.96 |
| Bureau of City Hall................ | ............ | 3,083,172.87 | 3,083,172.87 |
| Total 1909...................... | $1,470,029.28 | $3,221,074.72 | $4,691,104.00 |
| Total 1908. .................... | 1,786,350.38 | 846,260.39 | 2,632,610.77 |
| Total 1907...................... | 4,322,989.34 | 568,749.68 | 4,891,739.02 |
| Total 1906......... ............ | 4,652 119.58 | 441,012.03 | 5,093,131.61 |

TABLE NO. XXXVIII

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## TABLE No. XL.

### STATEMENT OF CONTRACT RESERVES UNPAID DECEMBER 31, 1909.

| BUREAUS | Water Fund | Corporate Fund | Total Contract Liability |
|---|---|---|---|
| Bureau of Engineering | $ 233,933.63 | | $ 233,933.63 |
| Bureau of Water | 1,729.11 | | 1,729.11 |
| Bureau of Bridges and Harbor | | $ 35,599.41 | 35,599.41 |
| Bureau of Streets | | 11,165.35 | 11,165.35 |
| Bureau of Sewers | | 2,044.96 | 2,044.96 |
| Bureau of City Hall | | 163,590.40 | 163,590.40 |
| Total 1909 | $ 235,662.74 | $ 212,400.12 | $ 448,062.86 |
| Total 1908 | 409,517.31 | 122,156.90 | 531,674.21 |
| Total 1907 | 431,403.28 | 49,048.59 | 480,451.87 |
| Total 1906 | 524,868.93 | 34,781.73 | 559,650.66 |

## TABLE No. XLI.

### STATEMENT OF UNEXPENDED BALANCES OF APPROPRIATIONS OF 1909 CARRIED FORWARD TO 1910 BY REASON OF CONTRACT LIABILITY.

| BUREAUS | Water Fund | Corporate Fund | Total Contract Liability |
|---|---|---|---|
| Bureau of Engineering | $ 538,904.55 | | $ 538,904.55 |
| Bureau of Water | 1,729.11 | | 1,729.11 |
| Bureau of Bridges and Harbor | | $ 63,069.19 | 63,069.19 |
| Bureau of Streets | | 27,546.81 | 27,546.81 |
| Bureau of Sewers | | 2,044.96 | 2,044.96 |
| Bureau of City Hall | | | |
| Total 1909 | $ 540,633.66 | $ 92,660.96 | $ 633,294.62 |
| Total 1908 | 709,001.27 | 416,635.31 | 1,125,636.58 |
| Total 1907 | 996,514.86 | 297,278.17 | 1,293,793.03 |
| Total 1906 | 1,790,594.69 | 174,494.99 | 1,965,089.68 |

## TABLE No. XLII.

## WATER WORKS.

TRIAL BALANCE. GENERAL LEDGER.

DECEMBER 31, 1909.

| L. F. | Account | Dr. | Cr. |
|---|---|---|---|
| | Water fund (Departmental) | $ 5,440,214.51 | $ 5,234,396.99 |
| | Assessed rates receipts | | 2,835,222.40 |
| | Meter rates receipts | | 2,166,224.52 |
| | Miscellaneous water sale receipts | | 30,655.08 |
| | Miscellaneous receipts | | 31,534.54 |
| | Warrants for collection | 545,551.32 | 346,611.08 |
| | Warrants for collection (delinquent) | 390,706.85 | 391,518.71 |
| | Contingent account extraordinary | 390,622.64 | 390,622.64 |
| | Judgment expense | 15,248.19 | |
| | Judgments in favor of water works | 51,830.65 | 51,830.65 |
| | Judgments against water works | 21,205.02 | 27,871.69 |
| | Refunds | 18,392.20 | |
| | Suspense | 63.92 | 1,207.35 |
| | Water works income | 150,764.91 | 91,049,090.11 |
| | Cashier's petty cash fund | 4,000.00 | 2,000.00 |
| | Dept. of supplies—stock account | 15,000.00 | |
| | Water works shop and repair account | 216,928.10 | 165,342.82 |
| | General assessment | 4,027,316.27 | 3,053,376.54 |
| | General assessment suspense | 5,265.59 | 1,113.86 |
| | Water works general assessment | 3,053,200.48 | 4,031,291.94 |
| | Water loan bonds, 3½ per cent., 1909 | 225,000.00 | 225,000.00 |
| | Water loan bonds, 3½ per cent., 1910 | | 103,500.00 |
| | Water loan bonds, 4 per cent., 1911 | | 159,500.00 |
| | Water loan bonds, 4 per cent., 1912 | | 821,000.00 |
| | Water loan bonds, 4 per cent., 1914 | | 130,000.00 |
| | Water loan bonds, 4 per cent., 1914 | | 446,000.00 |
| | Water loan bonds, 4 per cent., 1915 | | 1,485,000.00 |
| | Water certificates | | 1,500,000.00 |
| | General corporate bonds | | 1,400,000.00 |
| | Water pipe extension certificates | 53,085.64 | 418,980.31 |
| | Interest on bonds, certificates and judgments | 10,682,483.47 | |
| | Water loan sinking fund | 1,011,250.00 | |
| | Special assessment (mains) | 17,317.53 | 17,317.53 |
| | Special assessment (service pipes) | 92.11 | 92.11 |
| | Water works property and equipment | 51,612,325.18 | 395,622.64 |
| | Depreciation | 8,706,319.02 | |
| | Appreciation | | 3,272,037.27 |
| | Water works depreciation | | 5,434,281.75 |
| | Operation | 1,633,204.76 | 283.45 |
| | Repairs and renewals | 849,871.59 | 102.10 |
| | Water works expense | 36,473,171.95 | 803.82 |
| | Free taxes | 701,997.12 | |
| | Free water service | | 1,386,432.59 |
| | Free public service | 1,386,432.59 | 701,997.12 |
| | Special deposit fund | 155,620.56 | 135,523.84 |
| | Sundry deposits | 135,523.84 | 155,620.56 |
| | Total | $ 127,999,006.01 | $ 127,999,006.01 |

## TABLE No. XLIII.

## WATER WORKS.

TRIAL BALANCE. GENERAL LEDGER.

JANUARY 1, 1910.

| L. F. | Account | Dr. | Cr. |
|---|---|---|---|
| | Water Fund (Departmental) | $ 205,817.52 | |
| | Warrants for Collection | 198,940.24 | |
| | Warrants for Collection (Delinquent) | 8,188.14 | |
| | Judgments in favor of Water Works | | |
| | Judgments against Water Works | | $ 6,666.67 |
| | Suspense | | 1,143.43 |
| | Water Works Income | | 95,943,569.54 |
| | Cashier's Petty Cash Fund | 2,000.00 | |
| | Dept. of Supplies. Stock Account | 15,000.00 | |
| | Water Works Shop and Repair Account | 51,585.28 | |
| | General Assessment | 973,939.73 | |
| | General Assessment Suspense | 4,151.73 | |
| | Water Works General Assessment | | 978,091.46 |
| | Water Loan Bonds, 3½ per cent., 1910 | | 103,500.00 |
| | Water Loan Bonds, 4 per cent., 1911 | | 159,500.00 |
| | Water Loan Bonds, 4 per cent., 1912 | | 821,000.00 |
| | Water Loan Bonds, 4 per cent., 1914 | | 130,000.00 |
| | Water Loan Bonds, 4 per cent., 1914 | | 446,000.00 |
| | Water Loan Bonds, 4 per cent., 1915 | | 1,485,000.00 |
| | Water Certificates | | 1,500,000.00 |
| | General Corporate Bonds | | 1,400,000.00 |
| | Water Pipe Extension Certificates | | 365,894.67 |
| | Interest on Bonds, Certificates and Judgments | 10,682,483.47 | |
| | Water Loan Sinking Fund | 1,011,250.00 | |
| | Water Works Property and Equipment | 51,216,702.54 | |
| | Depreciation | 8,706,319.02 | |
| | Appreciation | | 3,272,037.27 |
| | Water Works Depreciation | | 5,434,281.75 |
| | Water Works Expense | 38,970,307.12 | |
| | Special Deposit Fund | 20,095.72 | |
| | Sundry Deposits | | 20,096.72 |
| | Total | $112,066,781.51 | $112,066,781.51 |

## TABLE No. XLIV.

## BONDED DEBT OF WATER WORKS.

## CITY OF CHICAGO WATER LOAN BONDS OUTSTANDING JANUARY 1, 1910.

| | | |
|---|---|---|
| BEARING 4 PER CENT. INTEREST AND MATURING AS FOLLOWS: | | |
| January 1, 1911 | $ 159,500.00 | |
| July 1, 1912 | 821,000.00 | |
| January 1, 1914 | 130,000.00 | |
| July 1, 1914 | 446,000.00 | |
| July 1, 1915 | 1,485,000.00 | |
| | | $3,041,500.00 |
| BEARING 3½ PER CENT. INTEREST AND MATURING AS FOLLOWS: | | |
| July 1, 1910 | $103,500.00 | |
| | | 103,500.00 |
| General Corporate Bonds bearing 4½ per cent. | $1,000,000.00 | |
| General Corporate Bonds bearing 4 per cent. | 400,000.00 | |
| | | 1,400,000.00 |
| Total bonded debt | | $4,545,000.00 |

NOTE:—In addition to the above, water certificates amounting to $1,500,000.00 and water pipe extension certificates amounting to $365,894.67 were outstanding December 31, 1909.

## TABLE No. XLV.

### STATEMENT OF ESTIMATED COST OF AND REVENUE FROM SUPPLYING WATER TO CONSUMERS DURING THE YEAR 1909.

COST :

| | | |
|---|---|---|
| Expenditures for operation (see Table No. XIX) | $1,632,921.31 | |
| Expenditures for interest on bonds, certificates and judgments (see Table No. XIX) | 274,855.72 | |
| Expenditures for repairs (see Table No. XX) | 849,769.49 | |
| Expenditures for refunds | 18,392.20 | |
| Total ordinary expenditures during the year 1909 (see Table No. XII) | | $ 2,775,938.72 |
| Sinking fund for City of Chicago water loan bonds, provided by annual corporate tax levy for 1909 | $ 157,250.00 | |
| Net depreciation of water works property and equipment during the year 1909 over amount expended for repairs | 551,210.47 | |
| Interest on net invested capital assumed at rate of 3 per cent | 1,355,151.08 | 2,063,611.55 |
| Total estimated cost of supplying water to consumers during the year 1909, including allowances for sinking fund, depreciation, and interest on net invested capital assumed at rate of 3 per cent | | $ 4,839,550.27 |
| Total number of gallons of water pumped during the year 1909 | | 175,939,500,000 |
| Cost per 1,000 gallons of water pumped, based on total ordinary expenditures | | $ .01578 |
| Assuming 50 per cent of total pumpage for free water service*, leakage and wastage, the cost rate to paying consumers per 1,000 gallons actually delivered to paying consumers, based on total ordinary expenditures, would be twice the cost per 1,000 gallons of water pumped based on total ordinary expenditures and would amount to | | $ .03156 |
| Estimated cost per 1,000 gallons of water pumped including allowances for sinking fund, depreciation and interest on net invested capital assumed at rate of 3 per cent | | $ .02752 |
| Assuming 50 per cent of total pumpage for free water service*, leakage and wastage, the estimated cost rate to paying consumers per 1000 gallons actually delivered to paying consumers, including allowances for sinking fund, depreciation and interest on net invested capital at assumed rate of 3 per cent, would be twice the estimated cost per 1,000 gallons of water pumped, including allowances for sinking fund, depreciation, and interest on net invested capital assumed at rate of 3 per cent and would amount to | | $ .05504 |

## TABLE No. XLV—Continued.

### REVENUE:

| | | |
|---|---|---|
| Revenue from assessed rates (see Table No. XV), | $2,835,222.40 | |
| Revenue from meter rates (see Table No. XV).. | 2,166,224.52 | |
| Revenue—Miscellaneous (see Table No. XV)... | 240,188.85 | |
| Total ordinary revenue during the year 1909 (see Table No. XV)............................ | | $ 5,241,635.77 |
| Revenue per 1,000 gallons of water pumped ............... | | $ .02979 |
| Assuming 50 per cent of total pumpage for free water service,* leakage and wastage, the revenue from paying consumers per 1,000 gallons actually delivered to paying consumers, would be twice the revenue from 1,000 gallons pumped and would amount to............. | | $ .05958 |

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*NOTE:—See Table No. XVII for estimated total amount of free water service during the year 1909.

JOHN A. KLEINE,
*Chief Accountant.*

# INDEX

PAGE
THE EXECUTIVE OFFICERS AND THE CITY COUNCIL .............. 3
PAST COMMISSIONERS OF PUBLIC WORKS........................ 4

## DEPARTMENT OF PUBLIC WORKS

EXECUTIVE AND BUREAU HEADS ................................ 6

**COMMISSIONER'S REPORT:**

Water—engineering........................................ 9
Bridges and Viaducts ..................................... 10
Harbors................................................... 11
Sewers.................................................... 11
Bureau of Water........................................... 12
Bureau of Streets ........................................ 12
Compensation Bureau....................................... 13
Bureau of Maps and Plats.................................. 13

## BUREAU OF ENGINEERING

**CITY ENGINEER'S REPORT:**

Operation and Maintenance of Water Pumping Stations.......... 17
Construction ............................................. 18
Water Pipe Extension ..................................... 19
Water Works Shop ......................................... 19
Tests and Inspections .................................... 19
Recommendation............................................ 20

**OPERATION AND MAINTENANCE OF WATER PUMPING STATIONS:**

Fourteenth Street......................................... 22
Sixty-eighth Street ....................................... 24
Chicago Avenue............................................ 26
Twenty-second Street ..................................... 28
Central Park Avenue ...................................... 29
Springfield Avenue........................................ 32
Harrison Street........................................... 35
Lake View................................................. 36
Rogers Park............................................... 37
Norwood Park ............................................. 38
Washington Heights........................................ 39

## OPERATION AND MAINTENANCE OF WATER PUMPING STATIONS—*Continued*:

PAGE
Fullerton Avenue .......... 40
Carter H. Harrison, Sr. .......... 40
Lawrence Avenue .......... 41
Comparative Analysis of Pumping Cost .......... 46
Table Showing Water Pumpage .......... 47

## LAKE CRIBS:

Two-Mile .......... 43
Four-Mile .......... 43
Carter H. Harrison .......... 43
Sixty-eighth Street .......... 44
Lake View .......... 44
Breakwater Crib .......... 44

## WATER PIPE EXTENSION:

Present Extent of System .......... 48
Construction .......... 48
Pipe Laid on Deposit .......... 49
Pipe Laid by Special Assessment .......... 49
Work Done on Account of Paving .......... 49
Maintenance .......... 50
Pipe and District Yards .......... 50
Protection of Fire Hydrants .......... 51
Electrolysis .......... 51
Inspection of Plumbing and Service Pipes .......... 52
Taps and Service Pipe Connections Installed .......... 53
Water Surveys .......... 53
Hydrants Placed in 1909 .......... 54
Total Number of Fire Hydrants .......... 54
Complaints Received .......... 54
Corporation Ferrules Installed .......... 55
Water Service Pipes Installed .......... 55
Work Done by Locating Gang .......... 55
Stop Valves Put In during 1909 .......... 56
Total Number and Size of Valves Used .......... 56
Water Pipe Lowered .......... 57
Water Service Pipes Laid by Contract .......... 58
Pipe Laid by Special Assessment .......... 61
Pipe Laid in South Division .......... 64
Pipe Laid in West Division .......... 65
Pipe Laid in Hyde Park .......... 68
Pipe Laid in Town of Lake .......... 70
Pipe Laid in Jefferson .......... 73
Pipe Laid in Lake View .......... 77
Pipe Laid in Calumet .......... 80
Pipe Laid in Rogers Park .......... 81
Pipe Laid in Norwood Park .......... 81

WATER PIPE EXTENSION—*Continued:*

PAGE
Pipe Laid in North Division ........ .......................... 82
Recapitulation of Pipe Laid Showing Why Laid ................. 83
Recapitulation of Pipe Laid ................................. 84
Total of Water Pipe .......................................... 85

WATER SURVEYS:

General.................. .................................. 85
Detailed Description of District Surveyed ...................... 86
Districts Ready for House to House Inspection . ................ 89
House to House Inspection .................................... 90
Underground Leakage.......................................... 90
Cost of Survey ............................................... 91
Revenue from Districts Inspected ............................. 92
Summary of House to House Inspection ......... ............... 93

WATER WORKS SHOP AND REPAIR DIVISION:

Hydrants and Valves Manufactured ............................ 94
Hydrants and Valves Repaired................................. 94

CONSTRUCTION DIVISION:

Water Fund Construction Contracts in Force .................. 96
Chicago Avenue Pumping Station............................. 102
Lake View Pumping Station.................................... 102
Southwest Land and Lake Tunnel............................... 104
Map of Section 3—Southwest Land and Lake Tunnel ............ 108
Section 3—Lineal Feet of Tunnel Lined........................ 109
Section 3—Monthly Progress .................................. 110
Map of Shafts and Drifts, Section 1—Southwest Land Tunnel .... 111
Section 1—Lineal Feet of Tunnel Lined........ ................ 112
Roseland Pumping Station................ .................... 113
Rogers Park Pumping Station......... ....................... 114
Blue Island Avenue Tunnel.................................... 114
Sizes and Length of Chicago Water Tunnel ..................... 119
Lawrence Avenue Pumping Station and Conduit.. ............... 120
Lawrence Avenue Intake Crib, Section N....................... 123
Thirty-ninth Street Pumping Station ................ ......... 124
Sewer Reversals.............................................. 124
Protection of Sewer at Thirty-fifth Street and Lake Michigan.... 124
Ninety-fifth Street Pumping Station........................... 124

TESTING DIVISION:

Tests and Inspections ................................ ....... 127
Evaporation Test Report ......... ............................ 128
Coal Analyses ................................................ 137

DIVISION OF BRIDGES AND HARBOR:

General..................................................... 138
Bridge Designing.............................................. 138

**DIVISION OF BRIDGES AND HARBOR—*Continued:***

PAGE
Repairs and maintenance 140
Viaducts 146
New Bridge Construction 146
Expenditures for Repairs, Maintenance and Operation 152
Operation of Bridges 154

**HARBOR DIVISION:**

Permits for Construction of New Docks 155
Permits for Rebuilding of Old Docks 155
Permits for Repairing of Old Docks 155
Summary of Permits for Dock Work 156
Permits for Dredging 156
Time Required in Dredging Work 156
Permits for Towing Scows 157
Fees Collected 157
Expenditures for Improvements of Harbors of Chicago 157
Summary of Dredging and Docking 158
Harbor Improvements made by the City of Chicago 159
Dredging and Removal of Harbor Obstruction 159
Harbor Improvement Work by Government 160
Commerce by Lake 162
Number of Accidents Damaging City Bridges 163
Table Showing Elevation of Lake Michigan 163
Lake Commerce of Chicago 164
Commerce by Lake and Canal 165
Movement of Vessels in Chicago River 166
Vessels Passing Bridges 166
Monthly and Annual Means in Degrees Fahrenheit 167
Table of Maximum, Minimum and Mean Temperature 167
Table of Daily Precipitation 170

## BUREAU OF SEWERS

Sewers and Catch Basins Cleaned 174
Expended for Repairs of Sewers, Manholes and Catch Basins 174
Expended for Cleaning Sewers and Catch Basins for past 23 Years 175
House Drains 176
Receipts of House Drain Division 177
Receipts from All Sources 178
Inspections 178
Miscellaneous House Drains Constructed 178
Stony Island Avenue Pumping Station 179
Pullman Pumping Station 179
Kensington Pumping Station 180
Ninety-fifth Street Pumping Station 180
Hegewisch Pumping Station 181
New Sewers and Catch Basins Built 182
Sewers Constructed by Special Assessment 183
Sewers Constructed by Private Contract 193

**BUREAU OF SEWERS—*Continued:***

PAGE
Drains Constructed by Private Assessment........................ 196
Cost of Sewers and Catch Basins, 1855 to 1910 .................... 200
Bench Marks and Street Grades.................................. 201
Standard Bench Monuments ...................................... 203

## BUREAU OF WATER

General Review of Work of the Year........................... 209

TABLES:

I Buildings Inspected....................................... 212
II Work of Shut-off Sub-Division. .. ......................... 213
III Work of Permit Sub-Division ................. .......... 214
IV Assessor's Increase and Decrease Checks.................... 215
V Free Water Service Accounts...... ......................... 216
VI Assessor's Miscellaneous Receipts and Earnings............. 217
VII Analysis of General Ledger—Assessed Rates Account....... 218
VIII Detail of General Assessment—Assessed Rates.............. 219
IX Analysis of General Ledger—Meter Rates Account.......... 220
X Names and Sizes of Water Meters in Service ............... 221
XI Distribution of Water Meters in Service.......... ........ 222
XII Gross Cash Collected by Cashier.......................... 223
XIII Warrants for Collection of Bureau of Water Collected by City Collector.................... .................... 224
XIV Refunds................ ........................ ....... 224
XV Net Cash Collected........................................ 225
XVI Comparative Statement of Gross Receipts and Expenses..... 226
XVII Comparative Statement of Collections...................... 226
XVIII Collections by U. S. Express Company...................... 226
XIX Amounts Uncollected........................................ 227
XX Amounts Uncollected...................................... ..... 227
XXI Meters Installed, Removed and Repaired.................... 228
XXII Cost of Operation—Meter Mechanical Division ............. 229
XXIII Revenue and Expense....................................... 230
XXIV Balance Sheet.............................................. 231

## BUREAU OF STREETS

Garbage, Ashes, Rubbish and Street Cleaning.................... 235
Dead Animals Removed.......................................... 236
Repair of Improved and Unimproved Streets and Alleys.......... 236
Sidewalk Repairs .... ...................................... .... 237
Vehicle Tax ........................... ...................... 237
Repair of South Approach to Halsted Street Bridge.............. 237
Subways.......................................................... 237
Intersections. ............................... ................ 239
Sheridan Road................. .................................. 240
Repair of East Approach to Division Street Bridge............... 240
Paving East Side of Clark Street, between Adams Street and Jackson Boulevard.................................. ....... 241

**BUREAU OF STREETS—*Continued:***

PAGE
Temporary Repairs of Approach to Rush Street Bridge ......... 241
Oiling........... .......................................... 241
Asphalt Repairs ............................................ 242
Repairs of Approach to Subway at Fulton Street................. 242
Country Roads.............................................. 242
Retaining Wall Stub End of Granville Avenue................... 243
Repair Material Used by Ward Superintendents............ .... 243
Permits Issued. ............................................ 244
Repairs by Public Service Corporations......................... 244
Summary of House Moving..................................... 245

## BUREAU OF COMPENSATION

Accounts Established in 1909.................................. 249
General Review of Work Accomplished ......................... 250

## BUREAU OF ARCHITECTURE

General Review of Work Accomplished ......................... 255

## BUREAU OF MAPS AND PLATS

General Review of Work....................................... 261
Plats Made............ ....................................... 264
Miscellaneous Maps and Plats.................................. 265
New Construction Work......................................... 265
Miscellaneous Work............................................ 265

## ACCOUNTING DIVISION

TABLES:

I Statement of Appropriations and Expenditures for the Year 1909, Corporate Fund, Ordinary Accounts ...... 272
II Statement of Appropriations and Expenditures for the Year 1909, Corporate Fund, Extraordinary Accounts . 279
III Statement of Appropriations and Expenditures for the Year 1909, Corporate Fund, Summary of Ordinary and Extraordinary Accounts ........................... 281
IV Statement of Expenditures of Bureau of Streets during the Year 1909........................................ 282
V Detailed Statement of Ward Expenditures of Bureau of Streets for the Year 1909.......... ................. 283
VI Detailed Statement of Expenditures from Vehicle Tax Fund by Wards, for Repair of Improved Streets for the Year 1909 ....................................... 284
VII Statement of Expenditures of Bureau of Sewers during the Year 1909 ...................................... 285
VIII Detailed Statement of Expenditures for Operation and Repairs of Sewerage Pumping Stations for the Year 1909 ................................................ 286

ACCOUNTING DIVISION—*Continued:*

TABLES: PAGE

IX Statement of Expenditures of Bureau of Bridges, Harbor and Viaducts during the Year 1909 .................. 287

X Statement of Expenditures for Rent and Equipment of temporary quarters, Removal of City Offices and construction of new City Hall .......................... 288

XI Statement of Corporate Fund Revenue of Department of Public Works for the Year 1909 .................... 289

XII Statement of Appropriations and Expenditures for the Year 1909, Water Fund, Ordinary Accounts .......... 290

XIII Statement of Appropriations and Expenditures for the Year 1909, Water Fund, Extraordinary Accounts .... 298

XIV Statement of Appropriations and Expenditures for the Year 1909, Water Fund, Summary of Ordinary and Extraordinary Accounts.............................. 303

XV Statement of Revenue for the Year 1909, Water Fund, Ordinary and Extraordinary Accounts ............... 304

XVI Comparative Statement of Ordinary Revenue and Ordinary Expense of Water System for the Years 1902 to 1909 inclusive........................................... 305

XVII Statement of Free Water Service rendered by the Chicago Water Works during the Year 1909 ................. 306

XVIII Statement of Water Fund Collections during the Year 1909 307

XIX Statement of Expenditures for Operation of Water System, including interest, during the Year 1909.............. 308

XX Statement of Expenditures for Repairs and Renewals of Water Works Property and Equipment during the Year 1909............................................ 309

XXI Statement of Expenditures for Additions, Extensions and Betterments of Water Works Property and Equipment during the Year 1909.......................... 310

XXII Comparative Statement of Expenditures for Operation of Water System, including interest, for the Years 1906 to 1909 inclusive .................................. 311

XXIII Comparative Statement of Expenditures for Repairs and Renewals of Water Works Property and Equipment for the Years 1906 to 1909 inclusive.................. 312

XXIV Comparative Statement of Expenditures for Additions, Extensions and Betterments of Water Works Property and Equipment for the Years 1906 to 1909 inclusive... 312

XXV Detailed Statement of Expenditures for Operation and Repairs of Cribs for the Year 1909 .................. 313

XXVI Detailed Statement of Expenditures for Operations of Pumping Stations during the Year 1909....... ...... 314

XXVII Detailed Statement of Expenditures for Repairs and Renewals of Pumping Stations during the Year 1909 .... 315

XXVIII Detailed Statement of Expenditures for Additions, Extensions and Betterments of Pumping Stations during the Year 1909............................................ 316

**ACCOUNTING DIVISION—*Continued:***

TABLES: PAGE

XXIX Comparative Statement of Expenditures for Operation of Pumping Stations during the Years 1902 to 1909 inclusive .......... 317
XXX Comparative Statement of Expenditures for Repairs and Renewals of Pumping Stations during the years 1902 to 1909 inclusive .......... 318
XXXI Comparative Statement of Total Ordinary Expenditures for Operation and Repairs and Renewals of Pumping Stations during the Years 1902 to 1909 inclusive ...... 319
XXXII Detailed Statement of Expenditures for Mains and Hydrants during the Year 1909.......... 320
XXXIII Detailed Statement of Expenditures for Meter Installations and Repairs during the Year 1909 .......... 320
XXXIV Classified Summary of Appraisement of Chicago Water Works Property and Equipment, December 31, 1909.. 320
XXXV Appraisement of Chicago Water Works Property and Equipment, December 31, 1909 .......... 320
XXXVI Percentage Table of Depreciation.......... 321
XXXVII Statement of Operation of Water Works Shops and Repair Division for the Year 1909.......... 322
XXXVIII Some Comparable Data on Rate of Wages of Employes per Day or per Year in Various Bureaus of Department of Public Works, during the Years 1906, 1907, 1908 and 1909, and Rate per cent Increase of 1909 over 1906..... 322
XXXIX Statement of Estimated Amounts Necessary to Carry Existing Contracts, December 31, 1909, to Completion, Including Unpaid Reserves of Same, and Allowance for Engineering and Inspection Expense.......... 322
XL Statement of Contract Reserves Unpaid December 31, 1909 323
XLI Statement of Unexpended Balances of Appropriations of 1909 Carried Forward to 1910 by Reason of Contract Liability.......... 323
XLII Trial Balance of Water Works General Ledger December 31, 1909.......... 324
XLIII Trial Balance of Water Works General Ledger January 1, 1910.......... 325
XLIV City of Chicago Water Loan Bonds Outstanding January 1, 1910.......... 326
XLV Statement of Estimated Cost of and Revenue from Supplying Water to Consumers During the Year 1909....... 327

## PHOTOGRAPHIC VIEWS

FACE PAGE
Boom Derrick at Lake View Pumping Station ........................ 103
End of 48-inch Header, showing heads at Lake View Pumping Station.. 105
48-inch Hydraulic Valve—Lake View Pumping Station .............. 105
Ninety-fifth Street Pumping Station................................ 125
Roseland Pumping Station—Boiler House Foundation ..... ......... 115
Roseland Pumping Station—Pump, Pit and Building Foundations.... 113
M. J. Doherty.................................................... 233
Setting 36-inch Hydraulic Valve—Lake View Pumping Station ...... 107
Shaft No. 1—Blue Island Avenue Tunnel .......................... 117
Sluice Gate in Shaft No. 1—Blue Island Avenue Tunnel ............ 115
Stony Island Avenue Pumping Station .............................. 179
Two 36-inch Discharge Pipes—North Side Lake View Pumping Station.............................................................. 107
Vertical, Triple Expansion Crank and Fly Wheel Pumping Engine—Lake View Pumping Station.................................... 103
View in old Cross Town Tunnel...................................... 117